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ABSTRACT

During the past two decades the activity-based costing (ABC) system has received a great deal of attention as a cost management innovation that may provide more accurate product costs than conventional cost allocation methods (Johnson 1987, Kaplan 1988, Cooper 1988a). Moreover, Favere-Marchesi (2001) stated that the ABC system is one of many such tools that have the potential to help Thai companies regain their competitive edge in an ever-growing world of contenders. The purpose of this study is to evaluate the implementation process of ABC systems in Thai organisations, particularly Thai State Enterprises (TSEs), in order to identify the factors influencing this implementation so as to make suggestions for its improvement. As part of this a theoretical framework for ABC implementation in Thai State Enterprises is developed.

This study has two objectives: the first is to obtain a picture of cost accounting systems, both traditional costing systems and ABC systems in Thai organisations, as the preliminary of this study. The second objective is to trace the ABC implementation in selected Thai State Enterprises where ABC systems have been implemented. This will examine the development of the ABC implementation in four Thai State Enterprises, namely, Thai Plywood Company Limited (TPC), Metropolitan Electricity Authority (MEA), Electricity Generating Authority of Thailand (EGAT) and TOT Corporation (Public) Company Limited (TOT).

The results from this study, after in-depth investigation, reveal a large number of sub-factors influencing implementations; however, these sub-factors were compiled as nine main factors including, (1) Top management support, (2) Computer systems, (3) Education and training, (4) ABC team, (5) Objectives of ABC implementation, (6) ABC implementation process, (7) Benefits of ABC implementation, (8) Problems with ABC implementation, and (9) Level of progress of ABC implementation. Finally, this study develops a theoretical framework for ABC implementation and is the first to empirically apply an implementation stage model to Thai State Enterprises.

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At the beginning of my journey, I was naive.
I didn't yet know that the answers vanish as one continues to travel,
that there is only further complexity, that there are still more interrelationships and more questions.
Kaplan, 1996

This thesis would not have been possible without the help and support of numerous individuals.

- I would firstly like to express my deepest gratitude to my supervisor, John J. Robinson. He truly provided a very helpful vision for my study and has given strong support continuously. During these years I have come to know John as a sympathetic and principle-centred person. His enthusiasm and integral view on research as well as his mission to produce *"only high-quality work and not less"*, has made a deep impression on me. I owe him lots of gratitude for having shown me this approach to research. It is impossible to express how much I have learned from him. Besides being an excellent supervisor, John has been as close as a relative and a good friend to me. I am really glad that I have come to know John J. Robinson. His encouragement and constructive comments have helped turn my ideas into reality throughout my doctoral study. His contribution will always be remembered.
- I express my sincere thanks to the Chief Executives of the Thai organisations that graciously allowed me the opportunity to collect data. I would also like to thank all

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- I feel a deep sense of gratitude to my late father, Watthana Tupmongkol who passed away during the middle of my study. My debt to him can only be hinted at here by acknowledging that it was his idea in the first place that I return to university to study PhD in England. The happy memory of my father still provides a persistent inspiration for my journey in this life, *"Please Dad, may your soul rest in peace"*.
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- Finally, I dedicate this thesis to the higher power whom I call “*God*”. It was “*His calling*” which led me to reach this academic achievement; therefore, it is appropriate that the present and future fruits of my labour be dedicated to “*His glory*”.

PUBLICATIONS AND PAPERS

- Robinson, J. J & Tupmongkol, T., (2001) “Cost Accounting for Thai State Enterprise”, Doctoral Work-Shop, BAA 2001 Annual Conference, University of Cardiff, Wales
- Robinson, J. J & Tupmongkol, T., (2002) “A Survey of Activity-Based Costing (ABC) System in the Thai Organisations”, Salford PG Conference 2002, University of Salford, Salford, England

DECLARATION

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning, except where due reference is made in the text of this thesis

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(Thana Tupmongkol)

August 2008

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GLOSSARY AND ABBREVIATION

1. General

- ABC Activity-Based-Costing
- ABM Activity-Based-Management
- ABB Activity-Base-Budgeting
- TC Traditional Costing
- TSEs Thai State Enterprise
- MF Main Factor
- SF Sub-factor

2. Thai Plywood Company Limited (TPC)

- TPC/CEO Chief Executive at TPC
- TPC/USER User at TPC
- TPC/PCO Project Coordinator at TPC
- TPC/TM1 Implementation Team 1 at TPC
- TPC/TM2 Implementation Team 2 at TPC

3. Metropolitan Electricity Authority (MEA)

- MEA/CEO Chief Executive at MEA
- MEA/DOA Director of Accountancy at MEA
- MEA/USER User at MEA
- MEA/PCO Project Coordinator at MEA
- MEA/TM1 Implementation Team 1 at MEA
- MEA/TM2 Implementation Team 2 at MEA
- MEA/TM3 Implementation Team 3 at MEA
- MEA/TM4 Implementation Team 4 at MEA

4. Electricity Generating Authority of Thailand (EGAT)

- EGAT/CEO Chief Executive at EGAT
- EGAT/DOA Director of Accountancy at EGAT
- EGAT/USER User at EGAT
- EGAT/PCO Project Coordinator at EGAT
- EGAT/TM1 Implementation Team 1 at EGAT
- EGAT/TM2 Implementation Team 2 at EGAT
- EGAT/TM3 Implementation Team 3 at EGAT
- EGAT/TM4 Implementation Team 4 at EGAT

5. TOT Corporation (Public) Company Limited (TOT)

- TOT/CEO Chief Executive at TOT
- TOT/DOA Director of Accountancy at TOT
- TOT/USER User at TOT
- TOT/PCO Project Coordinator at TOT
- TOT/TM1 Implementation Team 1 at TOT
- TOT/TM2 Implementation Team 2 at TOT
- TOT/TM3 Implementation Team 3 at TOT
- TOT/TM4 Implementation Team 4 at TOT

Chapter 1

Introduction

There is something in the wind
Comedy of Errors, Act III, Scene I
William Shakespeare

1.1. Background of the Research

In the late 1990s, an array of foreign manufacturing investment in Thailand resulted in its economy growing rapidly. The country has since been moving ahead with this economic policy and is now within the category of Newly Industrialised Countries (NICs). In today's global economic climate Thai businesses have inevitably faced the high competition of globalised trading (Nagwasdi 1999). Therefore Thai organisations must be able to use many kinds of the tools of management accounting to operate efficiently (Ruttanaporn 1998).

Furthermore, beginning in early 1997 and as a result of the Asian financial crisis, the country began to experience adverse financial and economic developments. The Government has since taken a number of economic steps to address these adverse developments. They have also entered into a financial assistance programme (the "IMF Financial Assistance Programme"), developed in conjunction with the IMF, consisting of \$17.20 billion US in loans and other financial assistance. The Government has commenced a series of economic

and social reforms (the "Reform Policy"), which are intended to restore confidence and economic stability and to address the structural weaknesses in the economy itself.

The privatisation of State Enterprises is one of the key goals of the Reform Policy. The Government is committed, with the assistance of the IMF and the World Bank, to enact new privatisation laws (Corporatisation Act B.E. 2542) and develop an overall regulatory framework for State Enterprises sectors. Thai State Enterprises (TSEs) are now under the process of privatisation as a new law to transform TSEs into public companies. The shares of these companies will be sold to the public (Yodmuangcharoen 1999). In order to achieve these objectives, TSEs must re-engineer or re-structure their organisations immediately. Indeed, a great deal of Thai organisations has already found activity-based costing (ABC) and activity-based management (ABM) to be useful tools. Moreover, some TSEs decided to implement new management systems in their organisations, including the ABC systems, as they prepared for drastic change and privatisation since 1993 (Buranakanonda 1997). As recent research in 2001, Morakul and Wu, (2001 p. 142) addressed that "The activity-based costing (ABC) system of the USA has been adopted by organisations in Thailand and elsewhere." Finally, Favere-Marchesi (2001 p. 16) also stated that activity-based costing (ABC) is one of many such tools that would help Thai companies regain their competitive edge in an ever-growing world of contenders.

1.2. Research Objectives

There are two objectives of this research. The first is to obtain a picture of cost accounting systems, both traditional (TC) and activity-based costing (ABC), in Thai organisations. The second objective is to trace the implementation of cost accounting systems in Thai State Enterprises (TSEs) where an activity-based costing (ABC) system has been implemented. This study will evaluate the implementation process of ABC and identify the factors influencing this implementation in order to make suggestions for improvement.

1.3. Scopes and Limitation of the Research

The scope of this research is limited to Thai organisations. For the first objective, it is limited to 438 Thai organisations, covering both public and private sectors, by the use of a questionnaire. Accordingly, in the second objective, the research is limited to Thai State Enterprises (TSEs). Some information is strictly confidential and cannot be made public, and thus the analysis is limited. The interviews are conducted at only four levels in the organisation, so the skill, experience, judgment and ethical standard are essential.

1.4. Contribution to Knowledge

The literature review shows that an ABC system has been implemented and investigated in many countries across the world. The main area of contribution of this research is to the literature regarding implementation problems for cost innovations. This research will develop

new measures for various rationale factors and is the first to empirically apply an implementation process for Thai State Enterprises. As Favere-Marchesi (2001 p. 16) stated, activity-based costing (ABC) is one of many such tools that would help Thai companies regain their competitive edge in an ever-growing world of contenders. Moreover, in their recent research of 2001, Morakul and Wu (2001 p. 142) addressed that “the activity-based costing (ABC) system of the USA has been adopted by organisations in Thailand and elsewhere” Consequently, the researcher will trace the factors which influence the implementation of ABC, and evaluate the implementation process of ABC to make suggestions for improvement. Hence, it is hoped that the results of this research will be valuable to Thai State Enterprises (TSEs) in order to improve the ABC implementation process in their organisations.

1.5. Outline of the Thesis

Chapter 1 Introduction

This chapter provides a brief introduction of the research, including background of the research, research objectives, scope of research and research design.

Chapter 2 Literature Reviews

A literature review of this research describes the background on activity-based costing (ABC). The reviews include the history and the nature of ABC, and discussions of the global competitive environment, contrasts between traditional costing (TC) systems and ABC systems, the mechanism of an ABC implementation, the benefits and limitations of ABC, the globalisation of ABC, ABC in Thai organisation and summary of ABC research study and journals. The structure of the literature review moves from the general to the specific.

Chapter 3 Background of Thai State Enterprises

This chapter describes the background of Thai States Enterprises (TSEs) and the privatisation of Thai State Enterprises (TSEs) in Thailand.

Chapter 4 Researcher Methodology

The research methodology utilised in the current study describes the research process from beginning to end, including research type, data collection, questionnaire development, and questions for a semi-structured interview. Moreover, the aim of this chapter is to offer a critique of the several of research methods together with the associated data collection and analysis techniques, as so to facilitate the most appropriate choice of research methods for this research. In order to preserve the rights and safety of the participants rules on ethics and

confidentiality in collecting data also are described. Finally, techniques to analyse data are provided.

Chapter 5 Preliminary Research

This chapter consists of the results of the questionnaire survey as the first objective of this research about an ABC system in Thailand, particularly, an ABC system in Thai State Enterprises (TSEs).

Chapter 6 Case Study - TPC

This chapter consists of the background of the organisation, the rationale of ABC system in the organisation, the profiles of the interviewee(s), the implementation process of ABC system in the organisation, and research findings. By contrast, this chapter provides the analyses data, which was collected from the in-depth interviews relating to individual respondent profiles, organisation characteristics, and ABC implementation.

Chapter 7 Case Study - MEA

This chapter consists of the background of the organisation, the rationale of ABC system in the organisation, the profiles of the interviewee(s), the implementation process of ABC system in the organisation, and research finding. By contrast, this chapter provides the

analyses data, which was collected from the in-depth interviews relating to individual respondent profiles, organisation characteristics, and ABC implementation.

Chapter 8 Case Study - EGAT

This chapter consists of the background of the organisation, the rationale of ABC system in the organisation, the profiles of the interviewee(s), the implementation process of ABC system in the organisation, and research finding. By contrast, this chapter provides the analyses data, which was collected from the in-depth interviews relating to individual respondent profiles, organisation characteristics, and ABC implementation.

Chapter 9 Case Study - TOT

This chapter consists of the background of the organisation, the rationale of ABC system in the organisation, the profiles of the interviewee(s), the implementation process of ABC system in the organisation, and research finding. By contrast, this chapter provides the analyses data, which was collected from the in-depth interviews relating to individual respondent profiles, organisation characteristics, and ABC implementation.

Chapter 10 Comparison of ABC Implementation in the Four Case Studies

This chapter examines the design of the four case studies, and compares important factors which influence the implementation of ABC, and evaluate the implementation process of ABC to make suggestions for improvement. Finally, a conceptual framework of an ABC implementation for Thai organisations, particularly the Thai State Enterprise (TSEs) will be established at this study.

Chapter 11 Conclusions, Limitation, and Further Research

This chapter contains conclusions on the entire research study, including a summary of the outcomes and implications of this research study. The contribution made by this study are also discussed. At last, the limitations of this research study are discussed and suggestions are made to future researchers engaging in the extension of this study on the topic of ABC systems.

Chapter 2

Literature Review

Sailors have an old saying:
"It doesn't matter in what direction the wind blows; it's important how I set the sails!"
James A. Brimson

2.1. Overview

This chapter introduces the activity-based costing (ABC) system as an advanced management accounting technique. The structure of the literature review moves from the general to the specific. The first part provides a general description of the global competitive environment. The second part provides a more focused description of ABC, including its background and history of development, and then compares ABC to Traditional Costing (TC) Systems. It also covers the globalisation of ABC, including the survey evidence on its implementation and relating factors, and lastly, ABC in the Thai organisations.

Moreover, this chapter reviews the adoption of ABC across the world and Shields and Young's (Cooper 1989a) behavioural and organisational variables that are relevant to the implementation of cost accounting systems expected to be associated with its implementation in Thailand, as well as the specific adoption of ABC systems by Thai organisations.

2.2. Global competitive environment

From the 1920s until the mid 1980s, management accounting practices were remarkably unchanged (Johnson 1987). At present, many organisations are facing a competitive global environment. They attempt to focus and concentrate on improving productivity and quality. Under this circumstance, they are interested in determining a better way to increase accurate cost information because this information is very important for the purpose of management and control, besides which it will lead to a way to improve both product and quality at the same time.

Since the beginning of the last century all organisations have used traditional cost systems in order to calculate product costs based on labour hours and / or machine hours (Innes 1998). The world is now changing because of technological developments and the globalisation of markets. These changes have led to important modifications in cost structures and cost behaviour in a way that means traditional management accounting techniques fail to provide the relevant data for companies (Johnson 1987).

Currently, automation has meant that increasing capital intensity has changed the relationship between indirect cost and direct labour cost in many industries. The proportion of direct labour cost (variable costs) has contracted considerably, while on the other hand fixed costs have grown (Mills 1990; Morrow 1992; Ferrara 1994; Chung 1997). Hence, using direct

labour, which is a small proportion of total manufacturing costs, to allocate indirect costs in the traditional systems was considered to be incorrect (Cooper 1988; Kaplan 1988; Dugdale 1990; Turney 1996).

Many companies now recognise that *“one cost system isn't enough”* for today's powerful competition (Kaplan 1988). It can also be dangerous in the global competitive environment because traditional cost systems cannot provide accurate product costing which may lead to a weak competitive strategy (Cooper 1988). Besides, a great many of organisations began to realise that the traditional costing system was actually generating inaccurate costing information in their organisations (Kaplan 1988). Obviously, the organisations need to know *“how accurate their cost information is”* within their organisations, and this can be presented in levels of detail to help management decision-making processes from strategic levels to operational levels. Therefore, it can state that the use of ABC system is still the answer for this situation.

In the more competitive environment of a turbulent economy, the importance of superior cost control, coherent performance measurement and precise knowledge of product costs increases because cost advantage is the essential component of differentiation strategies in competition (Johnson 1987). Moreover, O'Guin (1991) also claims that the ABC system is a cost planning system that provides information for managers to plan not only differentiation

strategies, but also low-cost strategies as it determines core activities and helps analyse systems and policies that drive costs. Kaplan (1992) claims that the ABC system provides valuable economic information to support a company's operational improvement and customer satisfaction programs. To survive and prosper in the competitive environment, managers need to use both ABC information and other sources on revenues, customer preference, process quality and cycle times. It is expected in this study that Thai State Enterprises (TSEs) would have an appreciation of the value of ABC and have implemented it for their own development in the changed environment.

2.3. Activity-based costing (ABC) systems over the last two decades

The emerging ABC system was developed and pioneered over the last two decades by Robert Kaplan¹ and Robin Cooper² as a new tool in terms of cost management accounting systems (Cooper 1987; Cooper 1988; Cooper 1988a; Cooper 1988b; Cooper 1989a; Cooper 1989b; Cooper 1992). They developed a methodology that recognised the need to understand how cost actually related to products and services, and thus, the ABC system is able to calculate the product costing (Drury 1989). The system itself has become popular and widely adopted as a new accounting technique and it is claimed that it avoids the deficiencies of the traditional systems, which commonly use direct labour to assign indirect costs (Kaplan 1988; Dugdale 1990). It is also claimed that it can provide more precise information about the cost

¹ Robert S. Kaplan is the Marvin Bower Professor of Leadership Development at the Harvard Business School, USA.

² Robin Cooper is a Professor of Management at the Claremont Graduate School, USA.

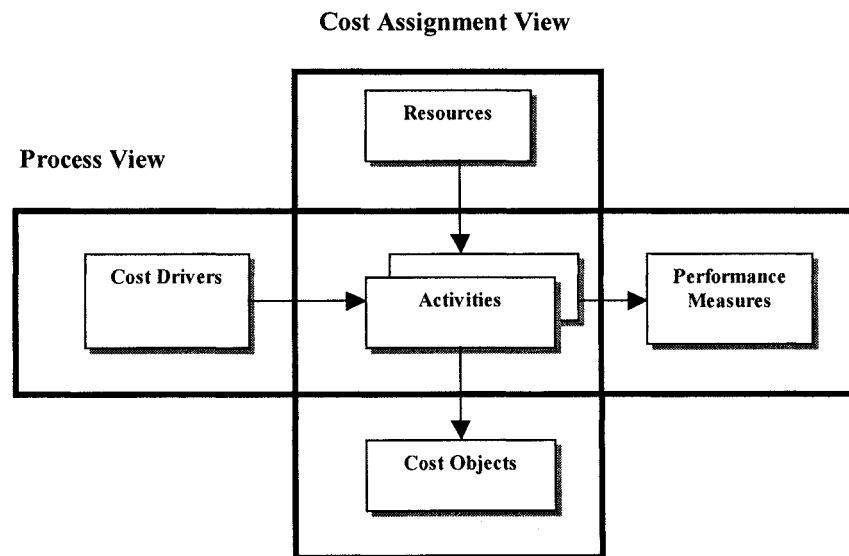
of products than the traditional systems, in particular when manufacturing processes are intricate or products are made in varying volume, as the ABC system allocates indirect costs, such as utilities or maintenance, to the products that consume these resources (Krumwiede 1997). An ABC system engages many benefits for both manufacturing (Johnson 1987), and service organisations (Rotch 1990).

Moreover, the traditional costing (TC) system uses the direct labour and / or machine hours to allocate the overhead costs directly to the product (Cooper 1991). On the other hand, an ABC system uses the cost-driver to allocate overhead costs to the activities and then to the product (Jeans 1989). ABC is more than an accounting technique, it focuses on the activities that are involved with the operation of a business and on the organisation's activities as the key element to analyse the cost behaviour in the organisation itself (Kaplan 1997). It is claimed that the use of ABC and several cost driver rates give a more realistic product cost (Babad 1993). Moreover, Cooper and Kaplan (1992) stated that the traditional costing (TC) system needed to be replaced by a system which focused on providing managers with information to manage and improve activities and processes.

However, the ABC system can be extended to cover non-production costs which are not related to production or which emerge from operation, such as distributing and selling costs (Innes 1991). Thus, the cost driver measurements of ABC (used as non-financial measures),

such as on-time deliveries or inventory turnover, help operational control, cost control and decision-making. Finally, it can also provide basic information for the budgeting process (Innes 1991). Interestingly, Johnson (1987, p. 15) states that ‘...ABC certainly ranks as one of the two or three most important management accounting innovations of the twentieth century’. Moreover, Kaplan (1988) points out that using a single cost system is not sufficient for companies in a competitive environment. The cost system has three essential but differing functions, namely (1) inventory valuation for financial and tax statements (2) operational control and (3) product-cost measurement (Kaplan 1988). The financial report is beneficial for external purposes but does not provide performance measurement and product-cost information for the managers. Although the traditional standard cost system arranges information with respect to inventory valuation and operational control, it cannot report accurately on product-cost information. An ABC system can provide information both on product costs and customer profitability analysis, but not information on actual expenses for periodic financial statements (Kaplan 1990b). Turney (1992) reports that there are two dimensions contained in the ABC model, namely a cost assignment view and a process view (see Figure 2.1).

Figure 2.1 Two -Dimensions of the ABC Model



Source: Turney and Stratton, 1992, p. 47; Kaplan and Cooper, 1998, p. 153

The cost assignment view of the ABC model contains information about the cost of resources, activities and products and customers. This information is used for setting cost targets, evaluating customer profitability and prioritisation of improvement projects. The process view of the ABC model contains information about why work is done and how well it is performed. This information is used to assess the performance of work in the organisation. It also provides information about each activity or process, including cost driver, performance measures, and so on (Turney 1992).

In addition, an ABC system is a management accounting process which allocates resource costs to products or customers based on activities, which are the factors causing work and incurring cost used by products or customers (Krumwiede 1997). Moreover, the system also assigns costs to products according to the activities and resources consumed in producing, marketing, selling, delivering and servicing them (Turney 1996). However, the most essential aspect of ABC system is its activity concept (Turney 1991). An ABC system assumes that activities originate cost and that outputs build the demand for activities (Turney 1996). It is designed to eliminate boundaries among departments (Morrow 1992), and to create more clearly the cost information or disclose 'the hidden profits and the hidden losses' (Argyris 1994).

However, it can be stated that both traditional and ABC systems have similar frameworks but also differences in indirect cost allocations (Innes 1998). Indirect costs, or support costs, such as machine maintenance and so on, are those that cannot easily be identified with individual products (Atkinson 1995) and can be misrepresented by the traditional costing systems. Obviously, the product costing of ABC systems is claimed to have more accuracy than those of the traditional methods (Cooper 1988; Kaplan 1988; Dugdale 1990; Innes 1991; Morrow 1992; Turney 1996; Krumwiede 1997).

Within the mechanism of an ABC implementation there are various concepts and procedures, which have been initiated and developed by many experts and consultant firms. Initially, there is a structured approach to implementing an ABC system as initiated and popularised by Robin Cooper. There are six major decisions needing to be made and another seven steps for an implementation plan as shown by Table 2.1.

Table 2.1 How to implement ABC by Robin Cooper's method.

Up-front decisions Six major decisions need to be made before an ABC system can be implemented. These are: <ol style="list-style-type: none">1. Should it be an integrated or stand-alone system?2. Should a formal design be approved before implementation?3. Who should "own" the final system?4. How precise should the system be?5. Should the system report historical or future costs?6. Should the initial design be complex or simple?
Implementation Plan These are the seven steps of an implementation plan: <ol style="list-style-type: none">Step 1: ABC seminar.Step 2: Design seminar.Step 3: Design and data gathering.Step 4: Progress meetings.Step 5: Executive seminar.Step 6: Results meeting.Step 7: Interpretation meetings.
Source: Cooper Robin (1990): Implementing an Activity-Based Cost system, Journal of Cost Management, Spring, p. 33-42

In fact, this structured approach has been used successfully in many organisations (Manufacturing Firms). It costs less than 50,000 pounds and requires approximately three people working full-time for between four and six months (Cooper 1990). Moreover, Cooper

(1990 p. 41) also stated that this structured approach, as explained here, does not guarantee success: it excludes many important factors that must be considered (For example, it ignores the critical role a “*champion*” of a new ABC system can play in selling it). However, this approach does provide a starting point for managers who are considering implementing an ABC system. In addition, there is also a method initiated by Focused Management Company Limited for ABC implementation. There are three extensive stages to implementation as shown by Table 2.2.

Table 2.2 How to implement ABC by Focused Management Inc.’s method.

<p>Stage I. Initiation</p> <ul style="list-style-type: none"> • Identify & Assess Needs • Establish Plans <p>Stage II. Seven Step Implementation Process</p> <p>Step 1: Formalise Project Scope</p> <p>Step 2: Identify Activities, Drivers & Processes</p> <p>Step 3: Create the Cost Flow Diagram (Architecture)</p> <p>Step 4: Data Collection</p> <p>Step 5: Build the Model (Software)</p> <p>Step 6: Reporting & Recommendations</p> <p>Step 7: Integration with Management Processes</p> <p>Stage III. Ongoing</p> <ul style="list-style-type: none"> • Update design to reflect changes made • Simulate change • Measure results- refresh data <p>Source: www.focusmanagement.com All rights reserved @ 2000 Focused Management Inc.</p>
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Obviously, this model has been used successfully in many organisations such as Northern Telecom, Volkswagen Canada, Kellogg’s, LA Gear, AT&T, DuPont, and many banks and insurance companies (Cokins 1999).

2.4. Implementation of ABC

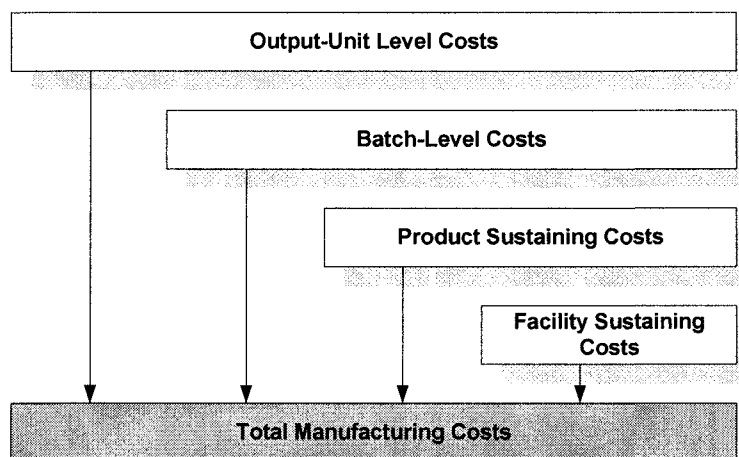
Indeed, in term of steps to ABC implementation, O'Guin (1991, p. 79) states that an ABC system design mirrors the company's operation. Designing the ABC system may seem overwhelming, but it is easy, as long as you remember how the organisation incurs costs, in fact, the art of designing an ABC implementation is choosing the cost drivers. To choose cost drivers you must correctly identify what triggers activities; these activity triggers are cost drivers. ABC cost assignments reflect the manner in which the organisation works and incurs cost. Besides, O'Guin (1991, p. 82) also mentioned that there are nine steps for ABC implementation as follow:

1. Develop fully "*burdened*" department cost from the general ledger.
2. Segregate costs into product driven or customer driven.
3. Split support department into major functions, the functions must: (a) have a significant cost; (b) be driven by different activities.
4. Split department costs into function cost pools.
5. Identify activity centres (homogeneous processes).
6. Identify first-stage drivers.
7. Identify second-stage drivers, based on: (a) data available; (b) correlation with resource consumption; (c) effect on behaviour.
8. Identify activity levels.

9. Choose number of cost drivers based on: (a) system use; (b) company complexity; (c) resources available.

Furthermore, in an ABC system, manufacturing procedures can be identified into four categories, namely; (1) Unit-level activities, (2) Batch-level activities, (3) Product-sustaining activities, (4) Facility-sustaining activities (Horngren 1997) see Figure 2.2.

Figure 2.2 Manufacturing Cost Hierarchy



Source: Horngren et al. (1997: p. 150)

However, O'Guin (1991) claims that the concept of hierarchical costs is a momentous difference between an ABC system and the traditional systems. Apart from differences in the

conception of hierarchical costs, an ABC system differs from the traditional systems in thinking about costs or expenses. The traditional systems stress the apportionment of past costs to products while the ABC system utilises future-orientated information, such as budgeted expenses, to allocate costs to products (O'Guin 1991, Cooper, 1992a #80). Moreover, Horngren (1997) and Acton (1997) also describe another difference between the systems; indirect cost allocations of an ABC system are based on non-financial variables, while those of the traditional systems are rooted in financial variables.

Moreover, an ABC system can apply not only to manufacturing but also to service organisations. Fixed costs in service organisations, employees' salary in particular, are more easily utilised than direct costs while customer's satisfaction is vital for service organisations. Thus, an ABC system is an effective tool for service organisations to trace costs to the services produced and to analyse activities and their value to the customer (Kock 1995). In practical terms, the implementation of ABC in service firms may have some problems, such as the difficulties in identifying employee's time devoted to specific activities (Crave 1993). However, some studies show that an ABC system is useful for service firms, and also maintain that it is rapidly expanding to non-manufacturing companies.

2.5. Stage for ABC implementation

Krumwiede (1997) states that many firms adopting ABC may not use it successfully since they do not perceive the behavioural and organisational aspects of each stage in the implementation process, and also claims that ABC is an information technology (IT) innovation, which provides information for their decision-making, as opposed to a new technical innovation. Thus, managers need to understand the stages of the IT implementation process to implement ABC successfully. The IT implementation process is classified as six stages: initiation; adoption; adaptation; acceptance; routinisation; and infusion (Cooper 1990). Interestingly, Krumwiede (1997) adapted Cooper and Zmud's (1990) IT stage model, based on organisational change, to the implementation of ABC. It describes each stage of the implementation process of ABC as follows.

1. *Initiation Stage*, this stage occurs when the organisation is showing that they are likely to initiate implementation.
2. *Adoption Stage*, it engages a decision to invest the resources necessary for implementation process of ABC. Besides, it must be approved from top management, and also the strong support is necessary in this stage.
3. *Adaptation Stage*, the ABC is developed and installed in this stage. That is, the ABC team members cooperate to identify cost drivers and to trace these activities to outputs. Acceptance Stage, it involves organisational members' requires to use ABC.

4. *Routinisation Stage*, it occurs when ABC is used as a part of normal activities in an organisation. Obviously, ABC is accepted and used by the persons outside the accounting/finance function for decision-making.
5. *Infusion Stage*, the ABC is harmoniously integrated with other organisational management systems, such as activity-based management (ABM) or activity-based budgeting (ABB).

In addition, Shields and Young (1989) developed a theoretical model for the implementation of ABC systems. They mention that the achievable implementation of ABC systems, depends on seven behavioural and organisational variables, including; (1) top management support; (2) linkage of the cost management system to competitive strategies; (3) linkage of the cost management system to performance evaluation and compensation; (4) sufficient internal resources; (5) training in designing, implementing and using cost management systems; (6) non-accounting ownership; and (7) consensus about and clarity of the objectives of the cost management systems.

2.6. Benefits and limitations of ABC

The information from ABC systems can be used for many things, such as determining a competitive price for a product, development of budgeting, future cost estimating, and so on. Thus, it is much more than a product costing accounting system. It allows management to

understand the factors that affect costs and how to manage them. It can be stated that the benefit of ABC is improving product costs and the performance measurement process. It engages many benefits for both manufacturing and service organisations.

Another benefit of ABC is improving product costs for decision-making and the performance measurement process. It does not change the cost accumulation process but makes that process and overhead cost assignment more realistic and relevant to how and why costs are incurred. The process allows management to focus on value-added activities (VAA) and non-value-added activities (NVAA) so that non-value-added activities can be reduced or eliminated (Rotch 1990). Also, Cooper (1990 p. 41) stated that ABC systems have attracted attention in recent years because they provide three major benefits:

- More accurate product costs.
- An improved understanding of the economics of production.
- A picture of the economics of activities performed by a company.

Moreover, John Innes³ and Falconer Mitchell⁴ (1998 p 34) addressed that the benefits of ABC are:

³ John Innes is a Professor of Accountancy at the University of Dundee, UK.

⁴ Falconer Mitchell is a Professor of Management Accounting at the University of Edinburgh, UK.

- Provides more accurate product line costing, particularly where non-value-related overheads are significant and a diverse product line is manufactured.
- Flexible enough to analyse costs by cost objectives other than products such as processes, areas of managerial responsibility and customers.
- Provides a reliable indication of long-run variable product cost, which is particularly relevant to managerial decision-making at a strategic level.
- Provides meaningful financial (periodic cost-driver rates) and non-financial (periodic cost driver volume) measures, which are relevant for cost management and performance assessment at an operational level.
- Aids identification and understanding for cost behaviour and thus has the potential to improve cost estimation.
- Provides a more logical, acceptable and comprehensible basis for costing work.

Apart from this, an ABC system is claimed to furnish many significant benefits over traditional systems, namely enhanced product cost accuracy, more comprehensive cost information for performance measurement, more pertinent data for management's decision-making, more potential for sensitivity analysis, and providing a model prospect on value-adding organisational transactions and activities {Bhimani 1992}

Nevertheless, Booth and Giacobbe (Acton 1997) who studied activity-based costing in Australian manufacturing firms found that the major benefits that adopters of ABC received from the implementation were more precise profit analyses, more accurate costing, better allocation of overheads, improved cost control and cost management. Also, many survey results show that ABC information is utilized to support the manager's operating decisions, such as performance measurement, product design and process improvement. It is also used to advocate strategic decisions, such as customer profitability and pricing and product mix (Innes 1991; Cooper 1992a; Chung 1997).

Due to the increasing accuracy of output costs ABC information enables managers to make better decisions on product, product design, process improvement, market segments and customer mix (Cooper 1988; Cooper 1992). It is a significant source of information for decision-making about product costs and product-line profitability. (Innes 1991; Booth 1997; Chung 1997). It is often claimed that accurate product costs are critical to pricing decisions, new product introductions, decisions to drop out-of-date products and how to respond to the products of competitors correctly and on time, since product costs identify causes of resource consumption and ways of saving resources, especially at the product and process design stage (Kaplan 1990a; Johnson 1987; Morrow 1992). It can lead product designers to decisions on trade-offs between minimizing cost and desired performance (Cooper 1992) and it provides the cost information of diverse designs that product designers can compare (Kaplan 1990a).

Moreover, the use of product costing at the design stage can be combined with target costing since they can determine the mix of products to manufacture and sell (Atkinson 1995) while evaluating profitability by product group or customer type (Morrow 1992). Besides, Morrow (1992) indicates that ABC information is an exemplary method of understanding the collection of costs at each layer because it provides a meaningful combination of each customer and market segment and the resources they consume. Building cost layers of an ABC system increases revenue values and creates profitability analysis. The results of profitability analysis support management in future decisions on customer and market, and in predicting the likely cost of alteration in each market segment (Morrow 1992). Thus, Kaplan (Bhimani 1992) claims that ABC information can help to determine the segments and customers that can be satisfied in terms of profitably.

Obviously, Innes and Mitchell (1998) also claim that ABC information is useful for managers in budgeting and performance measurement, as activity-based budgets prepare objectives for each activity. Moreover, activity based budgets provide the links between activities, organisational acts and resources consumed, and illustrate the differences between resource consumption and resource provision (Morrow 1992). As a result, these budgets improve operational control and performance measurement (Morrow 1992).

According to Adler et al. (2000) reported that key areas of ABC benefits are cost control and cost reduction, as well as improved profitability (Innes 1991). Allison (1996) states that in cost-reduction analysis ABC does not decrease cost as it can only be diminished by changing the activities performed and redeploying the redundant resources, such as reducing the time to set up a machine or removing unnecessary activities. Cost analysis of ABC only leads to operational improvement opportunities and increased profitability (Cooper 1992).

Furthermore Innes and Mitchell (1998) stated that an ABC system is one that gets rid of the distortions of information in traditional systems as well as non-value-added activities, which do not add to the customer's satisfaction with the product. It identifies the activities occurring and the resources they consume and links the activities to processes as 'cost objects'. Also, an ABC system assists management to understand and analyse business processes and their effects on the cost base. ABCs provide accurate cost information at the business process level which is the same as that which total quality management (TQM), operates and also supports TQM to evaluate costs and manage poor quality (Norris 1997).

Accordingly, Norris (1997 p. 189) claims that 'ABC complements TQM'. The analysis of the business processes by using activity analysis guides management to process improvement, including elimination of non-value-added activities (Morrow 1992) and then process improvement leads to cost reductions - one of the most important benefits of an ABC system

and major subjects of TQM (Adler 2000). Thus, Acton (1997) claim that if ABC is designed to facilitate the other strategic initiatives, such as TQM, ISO and so on, it will support their implementation more effectively. As continuing process improvement is the successive identification and elimination of waste in operating activities, it helps to eliminate non-value-added activities, decrease time to perform activity, select the low-cost activity and share activities with other products to yield the economies of high-volume production. These means of process improvement further reduce costs (Turney 1991). Hence, O'Guin (Bailey 1991) claims that ABC can reduce costs of companies and increase quality contemporaneously.

However, Innes and Mitchell (1998 p. 34) also state that there are some questions on ABC which merit more extensive investigation (on the limitations of the system) than has been the case to date:

- Little evidence to date that ABC improves corporate profitability.
- Little is known about the potential behavioural, organisational and economic consequences of adopting ABC.
- ABC information is historic and internally orientated and therefore lacks direct relevance for future strategic decisions.

- Practical problems such as cost-driver selection and cost commonalities are unresolved.
- Its novelty is questionable. It may be viewed as simply a rigorous application of conventional costing procedures.

The benefits that can be derived from an ABC system are dependent on the diversity of the services and products of an organisation, the level and degree of competition and the number of products or services sold. The ABC system provides information in a format that focuses management attention on the underlying causes of cost. It can be a trigger to improving processes by carrying out activities more effectively and efficiently (Holt 1999).

Moreover, it is important to note that nowadays the development of technology, the computerisation of processes, automation of production and cost-reduction program have caused a dramatic change in cost of production. Direct costs, such as labour, have been replaced with indirect costs such as depreciation, computer support, maintenance, engineering staff, and so on. In reality, several products and / or product lines often share these resources. The traditional costing system based on volume related allocation methods (direct labour) fails to identify the true amount of overhead resources used by individual products. On the other hand, the ABC system focuses on the activities required to produce each product and service. The costs are allocated to activities and then to the product and

service, based on the activities required in its production process (Booth 1998). Hence, it can be stated “ABC systems have emerged in companies where managers believe that the cost of the additional measurement required by the ABC systems is more than offset by the benefits the new systems can provide” (Cooper 1990).

However, some organisations would argue that they have gotten along for many years without using ABC, so why would they need to implement it at this moment? (Cokins 1999). Besides, a traditional costing system is not failing managers, is it? The answer is that if the organisations are profitable, or they are in the non-profit sector it may not be necessary to look for a new system such as ABC. On the other hand, a great many organisations could not survive with a traditional costing system because it may not provide accurate information for decision-making. The organisations need to be active and continuously remodel the cost structure at once. This is difficult to do so if the organisation does not understand the cost structure. Hence, an ABC system could be an answer to this question (Cokins 1999).

Some organisations have wanted to implement ABC systems for many years, but the cost has often been prohibitive. Clearly, with advances in technology, ABC is now generally affordable (Christensen 1995). Besides, these advances often dictate the need for ABC information in other management decisions, such as determining where costs could be reduced or where services could be improved (Pohlen 1994). Furthermore, ABC is part of

activity-based management (ABM), which also includes activity-based budgeting (ABB) finally (Lyne 1996).

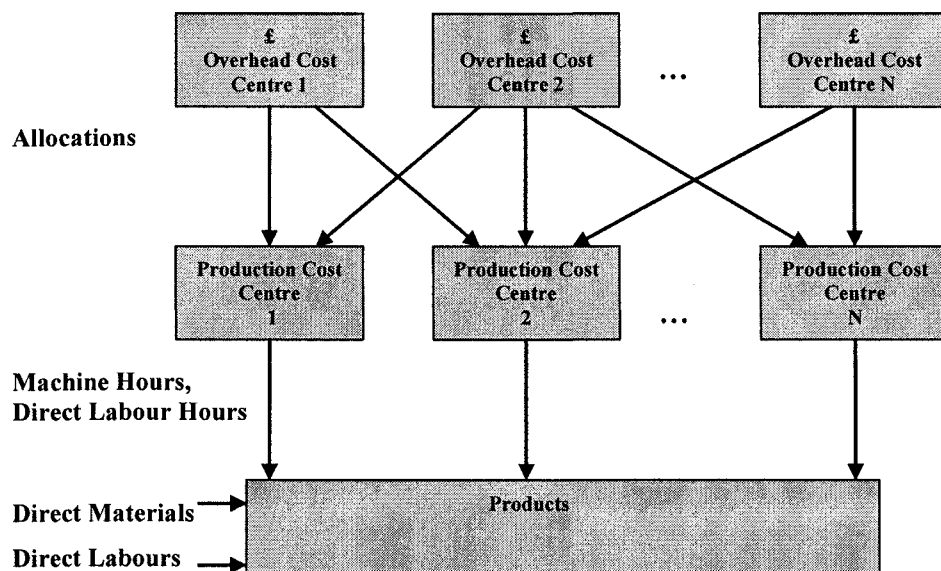
It seems that, one benefit of the implementation of ABC is to provide “more accurate information to managers about the cost and profitability of their business processes, products, services and customers” (Argyris 1994; Marakul 2001 p. 22) The use of more accurate information allows managers to have better planning and decision making, particularly in resource and overhead allocation. When McGowan (1994) reviewed previous literature concerning the use of ABC information, she found that the concept was not only used to obtain a better understanding of costs and profitability, but that it was also used in budgeting and cost control. Moreover, the new information provided results in a change in performance measurement used to evaluate the organisations. ABC systems allow managers to use both financial and non-financial performance measures. Performance measures such as quality, time and cost are readily available for each activity (Morakul 2001 p. 22).

2.7. Comparing TC systems and ABC system

In traditional cost accounting systems, costs are classified as either direct or indirect. These costing accounting operations use the model of cost distribution which is designed around the major factors of production such as direct materials, direct labour and overheads. However, this section describes the main difference between traditional costing (TC) systems and

activity-based costing (ABC) systems. Traditional costing systems; overhead costs are allocated to production cost centres, and then down to products, based on machine hours or direct labour hours (Kaplan 1997) as shown in Figure 2.3.

Figure 2.3 Traditional Costing (TC) Systems

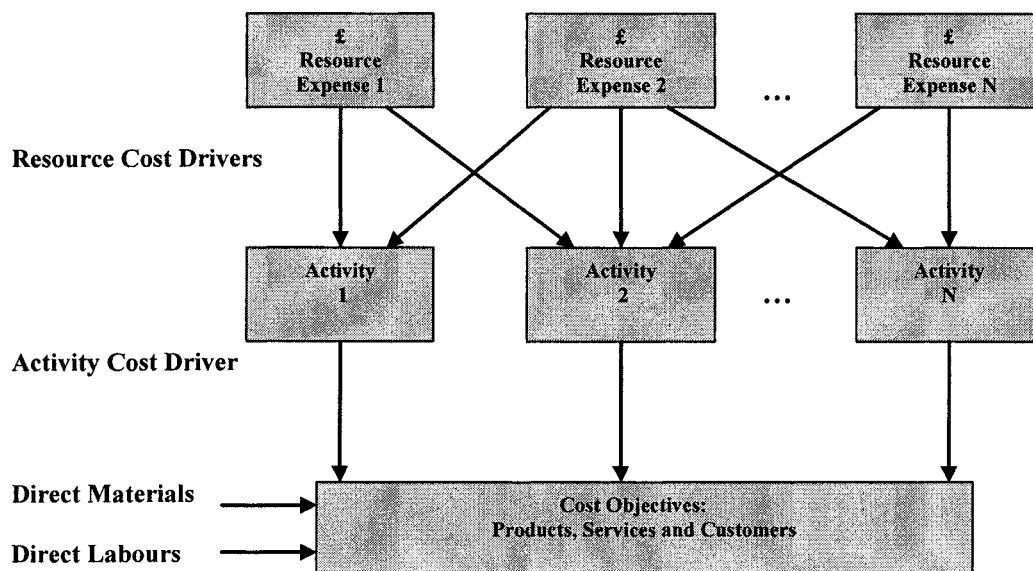


Source: Kaplan and Cooper, 1998. p 83

Traditional systems utilise only one cost driver, usual machine hours or direct labour hours, to trace the cost of overhead to the products. As Cooper (1989a p. 34) stated, this method of overhead allocation is accurate when overhead burden rates are low and the product mix in a facility is not diverse. However, corporations produce increasingly diverse product lines and

support large overheads, making traditional systems methods no longer as accurate. Hence, a new cost accounting system presented activity-based costing (ABC) as an alternative system. Activity-based costing (ABC) system; using ABC, overhead costs are traced to products and services by identifying the resources, activities and their costs and quantities to product output. A unit of output (a driver) is used to calculate the cost of each activity. To see the contrast here, the ABC system traces resource expenses to activities and uses activity cost drivers for tracing activity costs to objects as shown in Figure 2.4

Figure 2.4 Activity-based costing (ABC) systems



Source: Kaplan and Cooper, 1998. p 83.

The ABC system employs multiple cost drivers to trace the amount of resources consumed to the activities consuming them. It can be stated that the use of multiple cost drivers allows a more accurate connection between diverse resources and the activities that consume them (Cooper 1989a), and costing at the activity and process levels makes for a better understanding of how activities and output consume overhead resources (Pohlen 1994).

Comparison between TC systems and ABC system; the basic distinction between TC and ABC systems is as following: TC systems allocate costs to products based on attributes of a single unit. Allocations, therefore, vary directly with the volume of units produced and cost of goods sold. In contrast, ABC systems focus on activities required to produce each product or service based on each its consumption of the activities. TC principles hold that products cause costs, in the form of machine hours or direct labour hours. Obviously, ABC assumes that activities or “the processes or procedures that cause work to be performed in an organisation” cause cost (Miller 1990, p. 8).

2.8. Globalisation of ABC

An ABC system has been successfully implemented as a new management accounting technique in both manufacturing (Johnson 1987) and service firms (Rotch 1990). According to Innes and Mitchell (1998 p. 69) suggested that “By most reports, ABC has initially proved

highly successful in those firms which have implemented it". Therefore, there are a lot of research surveys regarding the adoption of ABC as shown in Table 2.3.

Table 2.3 Survey research of ABC adoption across the world

Year	Research Original	Firms Characteristic	Research Method	Planning Stage	Adoption	Rejected	Not Considered
1- 1990	UK	Manufacturing & Services	Questionnaire Survey	33.00%	6.00%	9.00%	52.00%
2- 1991	USA	Manufacturing	Questionnaire Survey	19.00%	11.00%	-	70.00%
3- 1992	Sweden	Manufacturing	Questionnaire Survey	-	22.50%	77.50%	-
4- 1992	Canada	Manufacturing	Questionnaire Survey	15.00%	14.00%	4.00%	67.00%
5- 1993	USA	Manufacturing	Questionnaire Survey	-	36.00%	-	-
6- 1994	UK	Manufacturing & Services	Questionnaire Survey	30.00%	21.00%	13.00%	36.00%
7- 1994	Dutch	Manufacturing	Questionnaire Survey	24.80%	12.00%	63.20%	-
8- 1995	Australia	Manufacturing	Questionnaire Survey	29.00%	12.00%	14.00%	45.00%
9- 1996	Germany	Manufacturing	Questionnaire Survey	-	3.00%	-	-
10-1996	Finland	Manufacturing	Questionnaire Survey	-	5.00%	-	-
11- 1996	Ireland	Manufacturing	Questionnaire Survey	21.00%	11.00%	13.00%	55.00%
12- 1997	Norway	Manufacturing	Questionnaire Survey	40.00%	-	11.00%	49.00%
13- 1998	USA	Manufacturing & Services	Questionnaire Survey	27.00%	36.00%	12.00%	25.00%
14- 1998	Malaysia	Manufacturing	Questionnaire Survey	-	4.00%	-	-
15- 1999	Australia	Manufacturing & Services	Questionnaire Survey	16.00%	20.00%	9.00%	55.00%
16- 2000	UK	Manufacturing & Services	Questionnaire Survey	20.00%	18.00%	15.00%	47.00%
17- 2001	Thailand	Manufacturing	Questionnaire Survey	-	12.00%	-	-
18- 2002	Thailand	Manufacturing & Services	Questionnaire Survey	-	15.00%	-	-
19- 2004	China	Manufacturing	Questionnaire Survey	-	2.00%	-	-
20- 2006	Malaysia	Manufacturing	Questionnaire Survey	-	36.00%	-	64.00%

Remark:

- (1) 1990 Innes, J. and Mitchell, F. (1991): ABC: a survey of CIMA member
- (2) 1995 Booth, P. and Giacobbe, F. (1997): Is Activity-based costing Still the Answers?

- (3) 1992 Groot, T. (1997): Activity-based costing in the Food Industry “An international company of USA and Dutch food producing companies”.
- (4) 1992 Armitage, H. and Nicholson, R. (1993): Activity-based costing: A survey of Canadian Practice.
- (5) 1998 Pohlen, T. and Londe, B. (1998): 1998 Survey Activity-based costing Applications within Business Logistics.
- (6) 1994 Innes, J. and Mitchell, F. (1995): ABC: a follow-up survey of CIMA members.
- (7) 1994 Groot, T. (1997): Activity-based costing in the Food Industry “An international company of USA and Dutch food producing companies”.
- (8) 1991 Booth, P. and Giacobbe, F. (1997): Predicting the Adoption of Activity-based costing in Australian Manufacturing Firms.
- (9) 1996 Scherrer, D. (1996): Management Accounting: European Perspective.
- (10) 1996 Malmi, T. (1999): Activity-based costing diffusion across organisations: an exploratory empirical analysis of Finnish firms.
- (11) 1996 Clarke, P. (1996): The Implementation of ABC/ABCM in a Large Irish Manufacturing Firms.
- (12) 1997 Bjornenak, T. (1997): Diffusion and accounting; the case of ABC in Norway.
- (13) 1999 Brown, D., Booth, P. and Giacobbe, F. (2001): Organisational Influences, Ownership, and the Adoption of Activity-based costing in Australian Firms.
- (14) 2004 Sulaiman, M., Ahmad, N. N., & Alwi, N. (2004): Management accounting practices in selected Asian countries: a review of the literature.
- (15) 1999 Brown, D., Booth, P. and Giacobbe, F. (2001): Organisational Influences, Ownership, and the Adoption of activity-based costing in Australian Firms.
- (16) 2000 Innes, J., Mitchell, F. and Sinclair, D. (2000): Activity-based costing in the UK’s largest companies: a comparison of 1994 and 1999 survey results.
- (17) 2001 Favere-Marchesi, M. (2001): Activity-based costing in Thailand.
- (18) 2002 Robinson, J. & Tupmongkol, T. (2002): Management Accounting: Activity-based costing (ABC) Systems in Thailand.
- (19) 2004 Sulaiman, M., Ahmad, N. N., and Alwi, N. (2004): Management accounting practices in selected Asian countries: a review of the literature.
- (20) 2006 Nasir, D. A., and Ruhanita, M. (2006): Activity Based Costing (ABC) adoption among manufacturing organisations - The Case of Malaysia.

Clearly a great deal of research has been carried out into the adoption of the activity-based costing (ABC) systems across the world in the last two decades. These are examples of the research which have been conducted since 1990:

ABC adoption in the UK: significant researches on ABC adoption have been carried out in the UK during 1990 to 1999 as follows:

- In 1990, a survey was undertaken by mail questionnaire. 720 questionnaires were mailed to CIMA members. The main aim of the study was to obtain some insight into the scale of interest in ABC in the UK. The questionnaires were sent to individuals who were employed by different UK-based organisations either in the manufacturing or the financial-services sectors, and 187 useable replies were received, giving an overall response rate of 26% (Innes 1991).
- In 1994, this survey included the UK's largest 1,000 companies (Times 1000 publication) in the manufacturing and financial-services sectors (the CIMA members who had responded to the 1990 questionnaire were included), 544 questionnaires were mailed and the number of respondents was 379, giving an overall response rate of 70%. It is important to note that the questionnaires were sent back not completed, as 32 responses were discarded due to significant missing data. This left 352 final usable responses, which was a final response rate of 65%. The main aim of this study

was to compare the adoption rate of ABC in the UK between 1990 and 1994 (Innes 1995).

- In 1999, the survey was based on the Times 1000 publication in the manufacturing and financial-services sectors, and 348 questionnaires were mailed with 209 responses received, giving an overall response rate of 60%. However, due to questionnaires being sent back uncompleted, 32 responses were discarded due to significant missing data. This left 177 usable responses, and a final response rate of 50%. The main aim of this study was to compare the adoption rate of ABC in the UK between 1994 and 1999 (Innes 2000).

ABC adoption in other countries in Europe; there were three surveys in manufacturing firms in Sweden in 1992, the Netherlands in 1994, Germany, Finland and Ireland in 1996, and Norway in 1997 as follows:

- In the case of Sweden and the Netherlands the researcher found this information from the working paper of Tom L.C.M. Groot at Vrije University, Amsterdam, Netherlands. The title of this working paper was “Activity-based costing in the Food Industry: An International Comparison of American and Dutch Food Producing Companies”, Vrije University, Amsterdam. It indicated that the ABC adoption rate was 22.50% in Swedish firms, and 12.00% in Dutch firms (Groot 1997).

- In the case of Germany, the survey included all manufacturing firms and was based on a questionnaire. Unfortunately, there are not any details of this research at the moment. The researcher found this information from the textbook “Management Accounting: European Perspective”, Oxford University Press. In 1996, it indicated that the ABC adoption rate was 6% in German manufacturing (Scherrer 1996).
- In the case of Finland, postal surveys were conducted to gather data; and the basis of the sample was all the members of the Federation of Forest Industries (FI). This survey dealt only with large and medium-sized organisations, employing more than 30 persons. 195 questionnaires were mailed and 57 useable replies were received, which gave an overall response rate of 30%. The aim of this study was to discover the motives for ABC adoption and its success in Finland (Malmi 1999).
- In the case of Ireland, the survey included all manufacturing firms in the Business and Finance (1995) listing of Ireland’s top 1,000 companies, based on annual sales (sales range from less than £5 million to £1.5 billion). 511 questionnaires were mailed and 208 useable replies were received. The overall response rate was in excess of 41%. The research investigated whether the dissemination of ABC information and its adoption was as widespread in Ireland (Clarke 1996).
- In the case of Norway, the Norwegian manufacturing industry was chosen as the sector to be studied. This study was based on a questionnaire survey. Questionnaires were sent to 132 companies, all with more than NOK 200 million in sales and 75

acceptable questionnaires were received, giving an overall response rate of 57%. The study focused on the diffusion of ABC in Norway (Bjornenak 1997).

ABC adoption in USA and Canada, there was only one survey in Canadian manufacturing firms in 1992 and two surveys in American manufacturing firms in 1991 and 1993. Meanwhile, in 1998, a survey took place in American business logistics as follows:

- In 1991 and 1993, it is important to state that there are not any details of these studies at the moment. The researcher found this information from the working paper series published by the School of Accounting, University of Technology, Sydney. This research was conducted by Peter Booth⁵ and Francesco Giacobbe⁶. They indicated that the ABC adoption rate in American manufacturing firms was 11% in 1991 and also found that the adoption rate had increased to 36% in 1993 (Armitage 1993; Booth 1998).
- In 1992, the Canadian manufacturing industry was chosen as the sector to be studied. This study was based on a questionnaire survey. Questionnaires were sent to 700 large manufacturing firms, and 250 acceptable questionnaires were received. The overall response rate was in excess of 36 % (Armitage 1993).

⁵ Peter Booth is a Professor of Accountancy at the University of Technology, Sydney, Australia

⁶ Francesco Giacobbe is a lecturer at the University of Technology, Sydney, Australia

- In 1998, the Ohio State University's Supply Chain Management Group conducted this survey on ABC. The purpose of this survey was to determine the extent to which ABC had expanded beyond manufacturing into other industries. The mailing targeted 2,250 companies possessing either a vice-president of logistics or distribution. The number of respondents was 281, which was an overall response rate of 12.5%.

ABC adoption in Australia; there were two surveys in Australian firms in 1995 and 1999 as follows:

- In July 1995, the Australian Society of Certified Practicing Accountants (ASCPA) conducted the survey, and aimed to analyse problems and benefits experienced by firms adopting ABC. The sample was selected in manufacturing firms with more than 150 employees and sales higher than \$50 million. 635 ASCPA members in Australian manufacturing firms were mailed a questionnaire on ABC, and 213 useable replies were received, giving an overall response rate of 34% (Booth 1998).
- In August 1999, the University of Technology, Sydney and the Australian Society of Certified Practicing Accountants (ASCPA) conducted a survey on ABC. The population was made up by 1279 members of ASCPA, with 669 in manufacturing industries and 610 in non-manufacturing industries. The questionnaire was mailed out in August 1999, and the number of respondents was 173, which gave an overall

response rate of 13.5%. The aim of this study was to examine the processes firms go through in ABC adoption (Booth 1997).

ABC adoption in Asia; there were five surveys including; Malaysia in 1998 and 2006, Thailand in 2001 and 2002, and China in 2004 as following:

- In 1998 this study considered the use of ABC by manufacturing firms in Malaysia using a questionnaire survey to gather data. An overall response rate of 28.00% indicated that the ABC adoption rate was 4% in Malaysian manufacturing organisations (Sulaiman 2004).
- In April 2001; this study considers the use of ABC by major industrial firms in Thailand. Service industries and public enterprises were not included in this study. A listing of Thai industrial firms was compiled with help from the Thai Federation of Industries and a survey questionnaire was developed to gather data concerning the use of ABC by those companies. From this listing, ranked in terms of total assets, the top 105 firms were selected, and 67 useable replies were received, giving an overall response rate of 64%. The aim of this study was to explore the use of the activity-based costing (ABC) system by major companies in Thailand (Favere-Marchesi 2001).

- In November 2002, the survey consisted of 438 mailed questionnaires to Thai organisations in both private, companies registered with The Stock Exchange of Thailand (SET), and public sectors, organisations or companies which are organised by the government, including manufacturing, banking and investment, IT and telecommunication and services. 87 useable replies were received, giving an overall response rate of 20%. The aim of this study was to obtain a picture of cost accounting systems, both traditional and activity-based costing in Thai organisations (Robinson 2002).
- Carried out in 2006 the purpose of the survey was to determine the adoption of ABC as an overhead costing technique amongst manufacturing organisations in Malaysia. The study used two methods of data collection, a survey and a case study. The study showed that 36% of the organisations were ABC adopters while 64% were non-adopters (Nasir 2006).
- Earlier in 2004 a questionnaire based survey was undertaken with the aim of establishing the adoption rate of ABC in Chinese manufacturing organisations. The study showed that only a low rate of 4% in China were ABC adopters (Sulaiman 2004).

Indeed, most conducted research has shown that the level of adoption of ABC has been spreading (Innes 1995). They also note that there have been some practical problems, such as

the lack of management support, lack of adequate resources, the amount of work it involves, inadequate computer software, education of managers and accountants, impact on organisation structure, resistance from employees, consultancy costs, difficulties in identifying and selecting cost-drivers and so on (Innes 1998). Furthermore, a significant number of studies on ABC found that the majority of respondents had not considered or rejected the system, on the account of fact that they had identified the practical problems and key issues such as an availability of sufficient personnel, computer software and so on (Anderson 1995a; Clarke 1996; Innes 1998).

Finally, it is argued "Never in the history of accounting has an idea such as ABC, moved very quickly from concept to implementation" (Brimson 1991 p. ix). Initially, managers viewed the ABC approach as a more accurate way of calculating product costs (Cooper 1991). According to the experiences of these organisations, they achieved a significant change in information, much of which was considered successful by accountants and managers (Kennedy 1996). On the other hand, some organisations still found that there were practical difficulties in implementing ABC (Shield 1996).

There have been a large number of articles and cases that have described and analysed ABC systems. It has mainly been applied to manufacturing and service firms. ABC systems have been successfully implemented in such corporations as General Motors, General Dynamics,

Hewlett-Packard, Martin Marietta Energy Systems (Johnson 1987), as well as some companies in the service industry, such as Alexandria Hospital, Union Pacific Railroad, Data Services (Rotch 1990), and some universities (Acton 1997).

By most reports ABC has initially proved highly successful in those organisations where it has been implemented. Indeed, a great number of organisations successfully implemented ABC as Kaplan's model (Cokins 1999). So, it has been widely and successfully used over the past decade in the United Kingdom, the United States of America, as well as other countries in Europe, Australia, Asia, and Southeast Asia (Shield 1996).

2.9. ABC in Thai organisations

Thailand is in the heart of the Southeast Asian mainland, and borders the Lao People's Democratic Republic, Cambodia with the Gulf of Thailand to the east, Myanmar and the Indian Ocean to the west and Malaysia to the south. In addition, Thailand is a member of APEC (Asia-Pacific Economic Cooperation), AFTA (ASEAN Free Trade Area) and GAAT (General Agreement on Tariffs and Trade). It is also a member of other multilateral trade organisations such as The UN, The World Bank, the International Monetary Fund, the International Finance Corporation, and the Asia Development Bank. Thailand's economy is expanding at more than double the world rate. Meanwhile, exports, tourism, investment and domestic consumption have also expanded rapidly. As someone said "*Thailand is a good*

place to live and a good place to do business". Thailand long ago left the world of rice monoculture and primary products. Today it is the world's primary producer of rubber, and is the world's largest exporter of canned and frozen foods. Thailand has changed from an agricultural to manufacturing society, like Malaysia, Taiwan and South Korea, and since 1990 has been imported across the world with products labelled "*Product of Thailand*" or "*Made in Thailand*".

For many years, Thai organisations have enjoyed the low-cost factors of production, allowing them to occupy a place in the manufacturing and assembly global markets. Due to increased global competition, Thai organisations must be able to use many kinds of management tools, including an ABC system, to operate efficiently. In this circumstance, it is not surprising that Thai organisations are under stress to implement such a system to improve cost measurement and so on. From the previous research carried out in April 2001, it was found that 12% of Thai companies (the top one hundred and five firms from the Thai Federation of Industries) are using ABC. On the other hand, the majority of Thai companies do not use ABC, mostly because of their lack of knowledge or understanding about this particular system (Favere-Marchesi 2001).

Interestingly, Favere-Marchesi (2001 p. 1) stated that the majority of companies in Thailand do not use ABC, primarily because of their lack of knowledge or understanding of this

approach. They envision ABC as a new tool costing system rather than as a refinement of their current system. Hence, many companies have opted not to use it because of the additional costs in implementation without considering the potential benefits. This survey found that Thai organisations did not use ABC for several reasons: (1) lack of knowledge about ABC, (2) lack of understanding about ABC, (3) too complex to implement, (4) lack of commitment from top management, (5) not needed because organisation is profitable, (6) too costly to implement, (7) too costly to maintain, (8) organisation already uses standard costs, (9) costs of using ABC exceed its benefits, and (10) resistance from employee (Favere-Marchesi 2001). Finally, Favere-Marchesi (2001 p. 16) stated that activity-based costing (ABC) is one of many such tools that would help Thai companies regain their competitive edge in an ever-growing world of contenders.

2.10. Activity-based costing since 2004⁷

Since the introduction of the first ABC systems in the mid-1980s it is possible to state that a considerable amount of research on its implementation has been carried out across the world. Statistically significant information is available regarding the effects of ABC systems which is associated with the behavioural, organisational and political aspects in organisations (Shield 1989; Krumwiede 1997), and identifies that top management support is one of the most important factors in implementing ABC. Much of the research shows that organisations

⁷ Professor Kaplan and Anderson described the TDABC approach at Harvard Business Review articles and their book called "TIME-DRIVEN ACTIVITY-BASED COSTING" since November 2004.

experience difficulties in implementing ABC systems for example: too much data collected, considerable amount of accountants' time, time-consuming, increased workloads, difficulty in identifying cost drivers, difficulties in identifying activities, and resistance to new cost accounting systems (Jeans 1989; Cooper 1990; Innes 1991; O'Guin 1991; Cobb 1992; Shield 1995; Innes 1996; Shield 1996; Innes 1998). This has been recognised by Kaplan⁸ who developed and pioneered ABC techniques; he and Anderson⁹ have come to acknowledge that many organisations have found it difficult to maintain their ABC systems because of the need to re-interview employees and to re-estimate resource usage each time the ABC system is updated. Further many managers were uncomfortable with the degree of subjectivity involved in estimating employees' proportion of time spent on each activity (Kaplan 2003). In order to overcome these difficulties Kaplan and Anderson (Kaplan 2007) they suggested a time-driven activity-based costing solution¹⁰, an alternative approach that simplifies estimation, enables the model to be updated easily whenever changes occur, and explicitly incorporates the role of capacity. The innovation called "*Time-Driven Activity-Based Costing (TDABC)*" involves estimating the time required to perform a transaction activity and uses this time in the cost data analysis (Kaplan 2007). It should be pointed out that the difficulties in implementing and maintaining traditional ABC systems have prevented ABC from being an effective, timely, and up-to-date management tool. It is claimed that the new approach

⁸ Robert S. Kaplan is the Marvin Bower Professor of Leadership Development at the Harvard Business School, USA.

⁹ Steven R. Anderson is the founder and chairman of Acorn Systems, a software and consulting firm headquartered in Houston, Texas, USA

¹⁰ The name Time-Driven Activity-Based Costing (TDABC) did not come into used until 2001. At the time, they called it Transaction-Based Activity-Based Costing.

"TDABC" overcomes these difficulties and offers organisations a methodology which has positive features such as being easy and fast to implement, easy to maintain and update, and inexpensive (Kaplan 2007). According to (Kaplan 2007, p. x) by 2006 the adoption of the new approach was much greater than originally envisaged with successful implementations in more than two hundred firms, particularly in midsize firms and Fortune 1000 companies.

2.11. Summary of activity-based costing research

Nowadays, an empirical research on the implementation of ABC and/or ABM has been carried out (see Table 2.4); therefore relatively little statistically significant information is available regarding the effects of the ABC system across any one industry or over an extended time period. In the last two decades, field studies have begun to examine the implementation of ABC in organisations (e.g. Cobb, Innes, and Mitchell, 1992, Norris, 1997). A large portion of the existent empirical research on ABC is theoretical in nature, and the research models proposed are only applicable in limited settings. Furthermore, the current body of practitioner-oriented literature concerning the implementation of ABC has addressed three major areas, namely; procedures of developing and implementing an ABC system, discussions of how ABC have improved the operations of an organisation and the difficulties associated with the implementation of ABC. This body of literature is valuable, because it provides guidelines for accounting managers who are interested in implementing the ABC

system in their organisation. However, it has limited value for empirical research (Walker 1996) (see Table 2.4).

Table 2.4 Empirical studies on ABC methodology

Year	Author/Title	Aims/ investigates	Results
1990	Rotch, "Activity-based costing in Service Industries."	ABC systems in service industry.	Describes an ABC framework that can be used in service industry.
1991	Noreen, "Conditions Under Which Activity-Based Cost Systems Provide Relevant costs."	Cost Drivers, costing Systems.	Provides three ideal conditions for an ABC system to provide relevant costs for product design and product drop decisions.
1992	Greenwood and Reeve, "Activity-Based Cost Management for Continuous Improvement: A Process Design Framework."	ABC systems framework.	Describes an ABC framework that can be used to support process analysis, product costing, and cost simulation.
1992	Srinidhi, "The Hidden Costs of Specialty Products."	ABC systems for special products.	Discussion difficulties with tracing cost of delay and holding cost of work in process to special product.
1993	Cob, Innes and Mitchell, "Activity-based costing Problems: The British Experience."	ABC systems in postal service.	Discussion problems with implementation with ABC by British postal service and possible reasons why ABC is sometimes not effective.
1993	Banker and Johnston, "An Empirical Study of Cost Drivers in the U.S. Airline Industry."	ABC systems in airline industry.	Findings: the cost driver model for US airline. Determine the framework to reduce cost and increase market share.
1994	Norris, "User Perceptions of an Application of Activity-based costing."	ABC systems in manufacturing organisation.	Found favourable perceptions of ABC, positive support for greater use throughout the organisation, and greater awareness of costs among non-accounting personnel.

1997	Briers, Luckett and Chow, "Data Fixation and the Use of Traditional Versus Activity-based costing systems."	An experiment design to investigate the use of TC and ABC for decision-making.	The results of this experiment provide some evidence of data fixation, as, on average, the decision-making performance of the TC GROUP was lower than of the ABC GROUP.
1999	Malmi, "Activity-based costing diffusion across organisations: an exploratory empirical analysis of Finland firms."	The driving forces behind innovation diffusion in management accounting change over the course of diffusion.	The result of this study may help to explain difficulties in and resistance towards infusion of new technologies inside organisations.
2001	De Vries, Pholbud, "Enhancing cost implications of Mapping by activity-based costing (ABC) – Case study for National Mapping Agency in Thailand."	ABC systems in public sector.	Describes an ABC framework that can be used in public sector. Determine the true cost of map sheet production.

Chapter 3

Background of Thai State Enterprise

Well done is better than well said.
Ben Franklin

In 1953, the government passed the “*Government Organisation Bill*” to set up the government organisations’ name, “*Thai State Enterprises (TSEs)*”, as legal entities to operate enterprises that contribute to economic development, public service and welfare by using funds from the national budget. It means that the government has to subsidise the operating costs and so on. The bill gave rise to various TSEs, which were set up and operated under the supervision and control of ministries whose responsibilities cover the scope of operations of TSEs. At the moment, there are 59 TSEs under the control of various ministries in the government.

Since 1960, TSEs have grown and played a very important role in the economics of the developing country. The government had to create an allowance in any way for their operating costs. So, TSEs became financial burdens to the government. The debt of TSEs on the international market became the national debt. Thus, the government must do something in order to decrease financial burdens, so the solution for survival is “*Privatisation*”. Moreover, privatisation is also the solution for increasing the efficiency of state enterprises in order to survive in the global competition environment. Privatisation has become a well

know strategy because the government can gain cash flows to decrease the financial burden and budget deficit at the same time. So far, a great number of countries, including Malaysia, Singapore, Philippine, Indonesia and South Korea, have privatised public utilities.

Initially, the privatisation programme in Thailand began in 1961 and has been a part of every national plan (Economic and Social Development Plan). The government has privatised more than 40 TSEs, decreasing the number of TSEs from more than 100 to 59 in the past decade. This programme arose, in part, from efforts to increase government spending for infrastructure investments because it imposed a legal limit on public external borrowing in 1985. The impact of this limit restricted the government's capability for financial infrastructure investments. So, privatisation was the first priority of the government in order to obtain more revenue more quickly and thus increase the infrastructure investments at that time (Dewenter 1994).

Furthermore, in 1997, as a result of Asia Crisis and the free floatation of the bath, the government sought and obtained assistance from the IMF. In the First Letter of Intent with IMF, the government agreed to reform the TSEs as soon as possible. Meanwhile, TSEs are currently under the process of privatisation as set up by law. The government proposes the "*Corporatisation Act*" as a new law for transforming TSEs into public companies. So, the

shares of these companies will be sold to the public. The government has initially selected 17 TSEs to come under a national holding company ahead of privatisation namely:

1. Thai Airways International Company,
2. Internet Thailand,
3. Telephone Organisation of Thailand,
4. Petroleum Authority of Thailand,
5. Communication Authority of Thailand,
6. Thai Tobacco Monopoly,
7. Government Housing Bank,
8. Government Saving Bank,
9. Port Authority of Thailand,
10. Airport Authority of Thailand,
11. Electricity Generation Authority of Thailand,
12. Metropolitan Electricity Authority,
13. Bangkok Metropolitan Bank,
14. Siam City Bank,
15. Provincial Electricity Authority,
16. Metropolitan Waterworks Authority,
17. Provincial Waterworks Authority

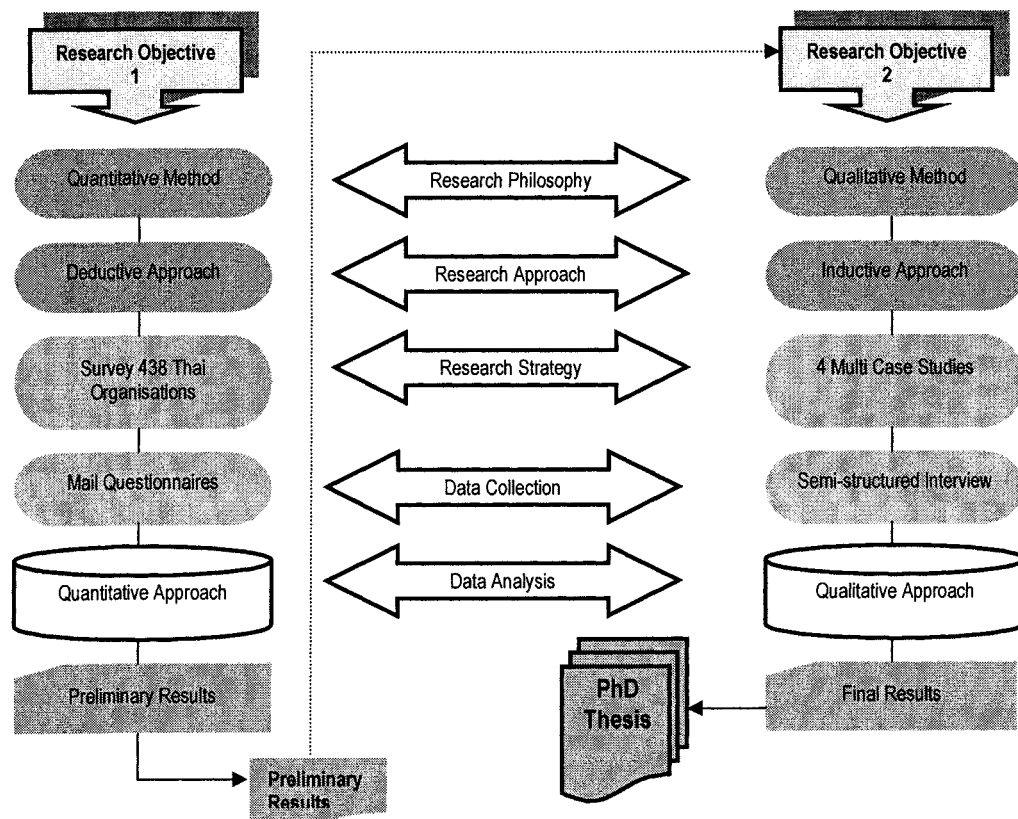
Chapter 4

Research Methodology

Think of the end before beginning.
Leonardo da Vinci

The chapter contains the methodology employed to conduct this research from beginning to end as shown in Figure 4.1.

Figure 4.1 Research Process



4.1. Research Philosophy

Research has been generally described by Smith and Brown (1995) as involving an investigation or study that leads to the discovery of facts or knowledge. Research philosophy depends on this way of thinking, in order to develop the knowledge (Saunders 2000 p. 85). The disciplines of researchers are established by developing a body of knowledge and contributing to knowledge incrementally (Phillips 1994 p. 61). Research can be represented in two paradigms, namely, quantitative and qualitative paradigms. The quantitative approach is also termed the traditional, the positivist, the experimental, or the empiricist paradigm, while the qualitative approach might include the naturalistic, the interpretative approach or the post modern perspective (Smith 1991). Bryman (2007, p. 402) indicates that qualitative research, sometimes called “phenomenological” (Saunders 2000), has become an increasingly popular approach in business research.

Moreover, when considering research in terms of methodology, quantitative study uses a deductive approach wherein theories and hypotheses are tested in a cause-and effect order. On the other hand, in the qualitative methodology, inductive logic prevails. The categories emerge from informants, rather than being identified *a priori* by the researcher. This emergence provides rich information which can be shaped into patterns or theories that help to explain a phenomenon (Creswell 1994 p. 7).

Quantitative method and qualitative method are two views about the research process. They are different, if not mutually exclusive, views about the way in which knowledge is developed and both of them have an important part to play in business and management research (Saunders 2000 p. 85). By contrast, the distinction between quantitative and qualitative methods is important, although it can be often overemphasised (Miller 1997).

4.1.1. Quantitative Research Method

Quantitative methods are associated with the positivist assumption that the things scientists are interested in can and should be measured as accurately as possible (Priest 1996). Indeed, the adequacy and accuracy of scientific measurement instruments are a central focus of concern. This is the sense in which quantitative methods are sometimes argued to be more objective than qualitative ones. The quantitative researchers who have been influenced by positivist philosophy argue that qualitative research results are of less value because they are too subjective (Lee 1999). Easterby-Smith et al. list eight features of positivism (Easterby-Smith 1991 p. 23) as follows:

1. *Independence*. The observer is independent of what is being observed.
2. *Value-freedom*. The choice of what to study, and how to study it, can be determined by objective criteria rather than by human beliefs and interests.

3. *Causality*. The aims of social sciences should be to identify causal explanations and fundamental laws that explain regularities in human social behaviour.
4. *Hypothetico-deductive*. Science proceeds through a process of hypothesizing fundamental laws and then deducing what kinds of observations will demonstrate the truth or falsity of these hypotheses.
5. *Operationalisation*. Concepts need to be operationalised in a way which enables facts to be measured quantitatively.
6. *Reductionism*. Problems as a whole are better understood if they are reduced to the simplest possible elements.
7. *Generalisation*. In order to be able to generalise about regularities in human social behaviour, it is necessary to select samples of sufficient size.
8. *Cross-sectional analysis*. Such regularities can most easily be identified by making comparisons of variations across samples.

4.1.2 Qualitative Research Methods

Qualitative methods answer such questions as “*what?*”, “*why?*” or “*how?*” and are centrally concerned with interpretation and analysis of what people do and say without making as heavy use of the measurement or numerical analysis as quantitative methods. Qualitative methods are designed to explore and assess things that cannot easily be summarised numerically by using a set of *ad hoc* procedures to define, count and analyse its variables.

Therefore, the study of a small sample of subjects is appropriate, along with interviews that use open-ended questions, descriptive observation of another culture's rituals. Qualitative research proceeds with an open mind, taking all data available into account as systematically as possible, and is guided by a carefully chosen research question, rather than the impulses of the researcher, and makes a contribution to the development of theory. Consequently, it seems to provide in-depth materials, flexibility, and rigorous pieces of work (Miller 1997). Sherman and Webb give a list of qualitative research's characteristics (Sherman 1988 p. 5) as follows:

- Events can be understood adequately only if they are seen in context.
- The contexts of inquiry are not contrived; they are natural.
- Qualitative researchers want those who are studied to speak for themselves, to provide their perspective in words and other actions (the persons studied teach the researcher about their lives).
- The aim of qualitative research is to understand experience as unified.
- Qualitative methods are appropriate to the above statements. There is no one general method.
- For many qualitative researchers, the process entails appraisal about what was studied.

In addition, it can be stated that qualitative research does not distinguish small differences as well as large-scale quantitative does (McDaniel 1999 p. 127), and qualitative researchers do not commonly enter with strong prototypical models to follow, whereas their quantitative counterparts enter with a relatively clear mental model for their designs (Cassell 1994 p. 6). Qualitative research is better suited for theory creation, whereas quantitative research is better suited for theory testing (Kvale 1996). Table 4.1 compares qualitative and quantitative research on several levels, and Table 4.2 summarises the possible advantages and disadvantages of these two approaches.

Table 4.1 Qualitative versus Quantitative Research

Comparison Dimension	Qualitative Research	Quantitative Research
Types of questions	Probing	Limited probing
Sample size	Small	Large
Information per respondent	Much	Varies
Administration	Requires interviewer with special skills	Fewer special skills requires
Type of analysis	Subjective, interpretive	Statistical, summarization
Hardware	Tape recorders, projection devices, video, pictures, discussion guides	Questionnaires, computer, printouts
Ability to replicate	Low	High
Training of the researcher	Psychology, sociology, social	Statistics, decision model, decision support systems, computer programming
Type of research	Exploratory	Descriptive or casual

Source: McDaniel and Gates, 1999, p. 126

Table 4.2 Key advantages and disadvantages of the main approaches to research design

	Qualitative Research (Phenomenology)	Quantitative Research (Positivism)
Advantages	<ul style="list-style-type: none"> Facilitates understanding of how and why Enables researcher to be alive to changes which occur during the research process Good at understanding social processes 	<ul style="list-style-type: none"> Economical collection of large amount of data Clear theoretical focus for the research at the outset Greater opportunity for researcher to retain control of research processes Easily comparable data
Disadvantages	<ul style="list-style-type: none"> Data collection can be time consuming Data analysis is difficult Researcher has to live with the uncertainty that clear patterns may not emerge Generally perceived as less credible by “non-researchers” 	<ul style="list-style-type: none"> Inflexible – direction often cannot be changed once data collection has started Weak at understanding social processes Often doesn’t discover the meanings people attach to social phenomena

Source: Saunders, Lewis and Thornhill, 1997, p. 74

No matter whether a qualitative or a quantitative methodology is adopted, an understanding of the process (see Figure 4.1) is very important for the success of research. Moreover, it can be stated, “it would be easy to fall in to the trap of thinking that one research approach is better than another. This would miss the point. They are better at doing different things. As always, which is better depends on the research question(s)” (Saunders 2000). Finally, it is important to note that the researcher has decided to apply both research methods for this research (see Figure 4.1).

4.2. Research Approach

There are two types of research approach; first, a “*deductive approach*” refers to a study where “a researcher would develop a theory and hypotheses and design research strategy to test this hypothesis”, second, an “*inductive approach*” refers to a study where “a researcher would collect data and develop a theory as a result of data analysis”. Moreover, it is important to note that “the deductive approach owes more to positivism and inductive approach to phenomenology” (Saunders 2000 p. 87). Table 4.3 compares the major differences between deductive and inductive approaches.

Table 4.3 Major differences between deductive and inductive approach to research

Deductive Emphases	Inductive Emphases
<ul style="list-style-type: none"> • Scientific principles • Moving from theory to data • The need to explain causal relationships between variables • The collection of quantitative data • The application of controls to ensure validity of data • The operationalisation of concepts to ensure clarity of definition • A highly structured approach • Researcher independence of what is being researched • The necessity to select samples of sufficient size in order to generalize conclusions 	<ul style="list-style-type: none"> • Gaining an understanding of the meanings humans attach to events • A close understanding of the research context • The collection of qualitative data • A more flexible structure to permit changes of research emphasis as the research progresses • A realization that the researcher is part of the research process • Less concern with the need to generalize

Source: Saunders, Lewis and Thornhill, 2000, p. 91

Consequently, the researcher decided to apply the *deductive approach* for the first objective and the *inductive approach* for the second objective, because they are the best research alternatives to achieve both objectives (see Figure 4.1).

4.3. Research Strategy

Robson (1993) lists the three traditional research strategies such as experiment, survey, and case study. Furthermore, there are various ways in which strategies can be categorised. For example, Gill and Johnson (1997), include another two types of research strategy, - action research and quasi-experiment. Besides, Saunders et al. (2000 p. 86) suggest there are eight research strategies, namely experiment; survey; case study; grounded theory; ethnography; action research; cross-sectional and longitudinal studies; exploratory, descriptive and explanatory studies. However, each method has advantages and disadvantages and data collected from each method may have different degrees of error, value, validity and reliability.

4.3.1 Research strategy for the objective 1

This research strategy is a survey (see Figure 4.1). The survey is a popular and common strategy for business and management research, as it allows the collection of a large amount of data. The data collection methods employed may be varied, for example any questionnaire, structured interviews and structured observation. It can be stated that “the

questionnaire is one of most popularly used survey data collection techniques” (Saunders 2000).

Hence, the selection of research method for this research is the questionnaire. Its population was 438 Thai organisations, and covered both public and private sectors, including manufacturing, banking and investment, IT and telecommunication, service, etc. in Thailand. By contrast, the definition of “*Thai organisations*” in this research can be identified as two different types of organisation. Firstly, “*private sector*” refers to the companies registered with The Stock Exchange of Thailand (SET) under the title “*public company*”. Secondly, “*public sector*” means the organisations or companies who are organised by the government under the title “*Thai State Enterprises*”. Consequently, this research aimed to obtain a picture of cost accounting systems, both traditional and activity-based costing, in Thai organisations as its first objective.

4.3.1.1. Data collection for objective 1

The researcher selected the mail questionnaire method because it is a well-established research method. The survey involved the use of semi-structured questionnaires employing both open and closed questions. The questionnaire was divided into three parts; part one: general information (about the organisations), including the characteristics of the organisation, type of business, location, number of employees, total annual turnover or

budgetary, main responsibilities on duty, qualifications and length of time working in the organisation; part two: any cost accounting system information, including the current cost accounting systems used and costing techniques, and the final part aimed to capture information about any activity-based costing (ABC) system in terms of ABC implementation in the Thai organisations.

The questionnaires consisted of nine pages (single sided) and included a covering letter in two languages (English and Thai) because this survey took place in Thailand. The researcher explained the purpose of this survey and how to respond. Only one person from each organisation was selected. The mail questionnaire was sent to the Thai organisations and addressed to the Director of Finance and Accounting. The respondent was given a month to return this questionnaire, and asked for their co-operation in a future interview. A prepaid self-addressed envelope was included. The respondent was guaranteed complete confidentiality. This survey was carried out by mail questionnaire as data collection and 438 questionnaires were mailed with 86 responses received. The overall response rate was in excess of 20 percent.

4.3.1.2. Data analysis for objective 1

In terms of data analysis at this stage, the questionnaires were analysed using the Microsoft Word and Microsoft Excel software package, through a quantitative approach.

4.3.2. Research strategy for objective 2

As mentioned earlier in the research process (see Figure 4.1) it is important to note that the second objective of this study is to explore the implementation of cost accounting systems in Thai State Enterprises (TSEs) where an activity-based costing (ABC) system has been implemented; the study will evaluate the ABC implementation process and identify factors influencing implementation in order to make suggestions for improvement. Obviously much qualitative research leans towards an inductive approach with the goal of generating theoretical concepts and models from the data itself, rather than starting out with a theoretical framework and imposing it on the world. In this context this study intends to establish a conceptual framework of the process of ABC implementation in Thai State Enterprises (TSEs). This is supported by Bryman and Bell (2007, p. 14): “with an inductive approach, theory is the outcome of research, in other words the process of induction involves drawing generalisable inferences out of observation”. The researcher will adopt an inductive approach in order to achieve the second objective.

An outline of the general inductive approach to qualitative data analysis is described and details provided of the assumptions and procedures used. The purposes of using an inductive approach are: (1) to condense extensive and varied raw text data into a brief summary format; (2) to establish clear links between the research objectives and the summary findings derived from the raw data; (3) to develop a model or theory of the underlying structure of

experiences or processes which are evident in the raw data. The inductive approach reflects frequently reported patterns used in qualitative data analysis (Thomas 2003); some of the assumptions that can be seen to underpin the use of an inductive approach are described as follows.

- Data analysis is determined by both research objectives (deductive) and multiple readings and interpretations of the raw data (inductive), so that the findings are derived from both the research objectives outlined by the researcher(s) and findings arising directly from the analysis of the raw data.
- The primary mode of analysis is the development of categories from the raw data into a model or framework that captures key themes and processes judged to be important by the researcher.
- The research findings result from multiple interpretations made from the raw data by the researcher who code the data. Inevitably, the findings are shaped by the assumptions and experience of the researchers conducting the research and carrying out the data analyses. In order for the findings to be usable, the researcher (data analyst) must make decisions about what is more important and less important in the data.
- Different researchers are likely to produce findings that are not identical and which have non-overlapping components.

- The trustworthiness of findings can be assessed by a range of techniques such as (1) independent replication of the research, (2) comparison with findings from previous research, (3) triangulation within a project, (4) feedback from participants in the research, and (5) feedback from users of the research findings.

The outcome from an inductive analysis is the development of a model or framework which summarises the raw data and conveys key themes and processes. Thomas (2003) states that the categories resulting from the coding, that are at the core of inductive analysis, potentially have five keys features as follows (Thomas 2003):

1. *Label for category*: word or short phrase used to refer to category. The label often carries inherent meanings that may not reflect the specific features of the category.
2. *Description of category*: description of the meaning of category including key characteristics, scope and limitations.
3. *Text or data associated with category*: examples of text coded into category which illustrate meanings, associations and perspectives associated with the category.
4. *Links*: each category may have links or relationships with other categories. In a hierarchical category system, these links may indicate super ordinate, parallel and subordinate categories. Links are likely to be based on commonalities in meanings between categories or assumed causal relationships.

5. *Type of model in which category is embedded*: the category system may be incorporated in a model, theory or framework. Such frameworks include: an open network (no hierarchy or sequence), a temporal sequence (e.g., movement or time), or a causal network (one category causes changes in another). It is also possible that a category may not be embedded in any model or framework.

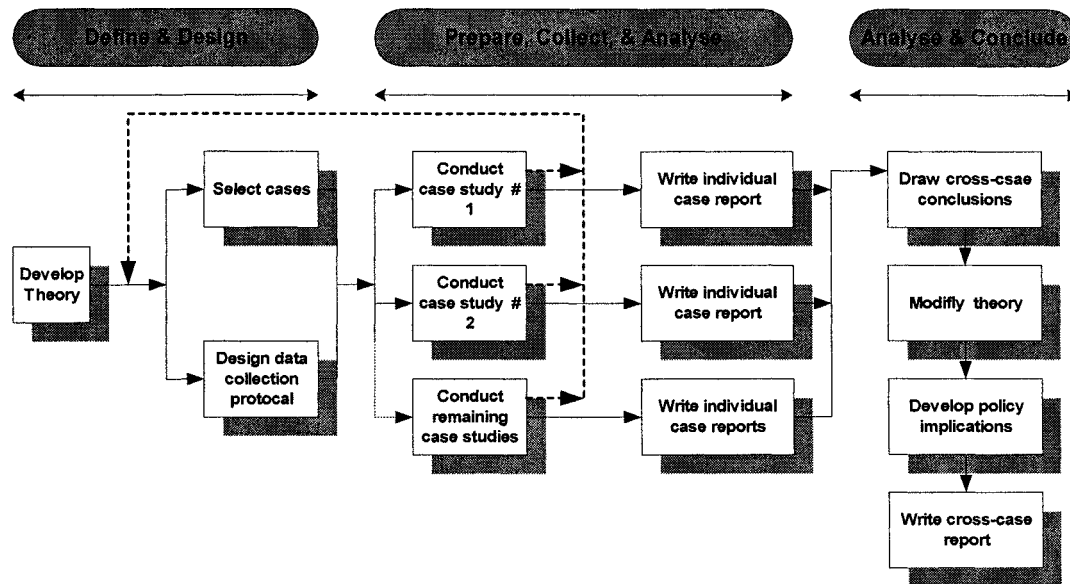
Nevertheless, this research strategy is a case study (see Figure 4.1). According to (Yin 1994 p. 13), “Case studies are the preferred strategy when *how* and *why* questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon without some real-life context”. Meanwhile, (Robson 1993 p. 40, 44) defined case study as “the development of detailed, intensive knowledge about a single *case* or a small number of related *cases*”, and moreover, “the case study approach also has considerable ability to generate answers to the questions *why* as well as *what* and *how* questions”. The data collection methods employed may be various such as questionnaires, interviews, observation and documentary analysis (Saunders 2000). However, Yin (1994) stated that there are two types of case study design, including (1) Single case study, (2) Multiple case studies. These two types are as follows.

- A Case Study: a primary distinction in designing case studies is between single case study and multiple case studies. It means the need for a decision prior to any data

collection, on whether a single case study or multiple case studies are going to be used to address the research question. Moreover, it is important to note that the single case study is an appropriate design under several circumstances, such as a single experiment (testing a well-formulated theory), an extreme/unique case (the situation in clinical psychology), and revelatory case (scientific investigation). The single case study can represent a significant contribution to knowledge and theory building and it can even help refocus future investigations in an entire field (Yin 1994).

- Multiple Case Studies; the same study may contain more than a single case. In this circumstance, the study has to use a multiple case study. As mentioned by Herriott and Firestone (1987), multiple case studies have distinct advantages and disadvantages in comparison with single case study. The evidence from multiple case studies is often considered more compelling, and the overall study is therefore regarded as being more robust. Despite this, the decision to undertake multiple case studies cannot be taken lightly. Every case should serve a specific purpose within the overall scope of inquiry. Also, conducting multiple case studies can require extensive resources and time beyond the means of a single student or independent research investigator (Yin 1994). The replication approach to multiple case studies is illustrated in Figure 4.2.

Figure 4.2 Case Study Method



Source: Yin, 1996, p. 49

Moreover, the qualitative case study research is defined as an “intensive, holistic description and analysis of a single entity, phenomenon, or social unit.” It is useful for an in-depth analysis of problems to understand the processes or situations in context. Compared to survey research, a case study seeks holistic description and explanation by examining a small number of units over a large number of variables and conditions. Because it is so intensive, it provides insights into variables, processes and interactions that merit further attention. Finally, case study results can lead to the development of the abstractions, concepts, hypotheses, and theories for future research.

Table 4.4 Six Sources of Evidence: Strengths and Weaknesses

Source of Evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> Stable - can be reviewed repeatedly Unobtrusive - not created as a result of the case study Exact - contains exact names, references, and details of an event Broad coverage - long span of time, many events, and many settings 	<ul style="list-style-type: none"> Irretrievability - can be low Biased selectivity, if collection is incomplete Reporting biased - reflects (unknown) bias of author Access - may be deliberately blocked
Archival Records	<ul style="list-style-type: none"> (Same as above for documentation) Precise and quantitative 	<ul style="list-style-type: none"> (Same as above for documentation) Accessibility due to privacy reasons
Interviews	<ul style="list-style-type: none"> Targeted – focuses directly on case study topic Insightful – provide perceived causal inferences 	<ul style="list-style-type: none"> Bias due to poorly constructed questions Response bias Inaccuracies due to poor recall Reflexivity – interviewee gives what interviewer wants to hear
Direct Observations	<ul style="list-style-type: none"> Reality – covers events in real time Contextual – covers context of event 	<ul style="list-style-type: none"> Time - consuming Selectivity – unless broad coverage Reflexivity – event may processed differently because it is being observed Cost – hours needed by human observers
Participant-observation	<ul style="list-style-type: none"> (Same as above for direct observations) Insightful into interpersonal behaviour and motives 	<ul style="list-style-type: none"> (Same as above for direct observations) Bias due to investigator's manipulation of events
Physical Artefacts	<ul style="list-style-type: none"> Insightful into cultural features Insightful into technical operations 	<ul style="list-style-type: none"> Selectivity Availability

Source: Yin, 1996, p. 80

Methodological Triangulation; a triangulation approach will be used in this research. As mentioned by Yin, it is very important to note that “case studies need not be limited to a single source of evidence. In fact, most of the better case studies rely on a wide variety of sources. All sources of evidence were reviewed and analysed together, so that the case study’s findings were based on the convergence of information from difference sources, not a quantitative or qualitative data one.” (Yin 1994, p. 91). However, according to Yin (1994 p. 91, 92), triangulation is the rationale for using multiple sources of evidence, allowing an

In addition, case studies are widely used in organisational studies and across the social sciences, and there is some suggestion that the case study method is increasingly being used and with a growing confidence in the case study as a rigorous research strategy in its own right (Kohlbacher 2006). According to Stake (2000) concurs, suggesting that case studies have become “*one of the most common ways to do qualitative inquiry*” but at the same time concedes that “*they are neither new nor essentially qualitative*” (Stake 2000, p. 435). In any case, quoting one of the most prominent experts in case study research Yin (2003a) also cited that using case studies for research purposes remains one of the most challenging of all social science endeavours (Yin 2003a, p. 1).

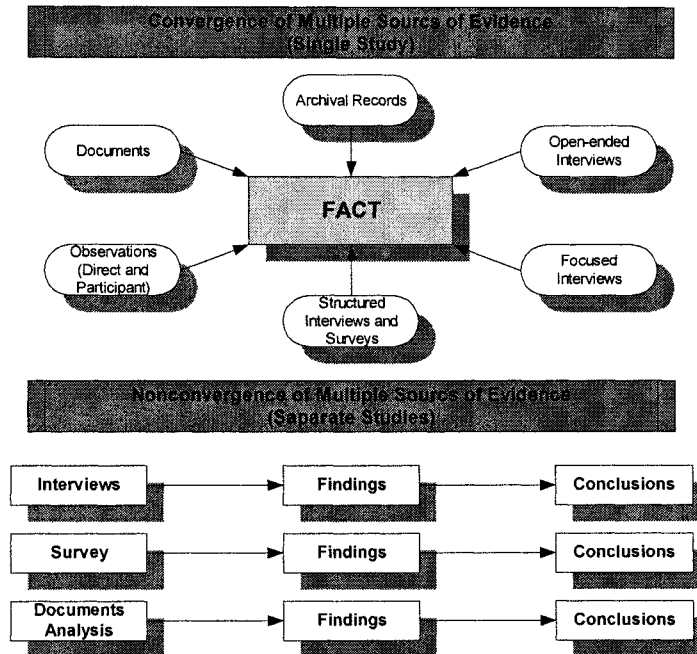
4.3.2.1. Data collection for objective 2

Data collection can rely on many sources of evidence, such as documentation, archival records, interview, direct observations, participant-observation, and physical artefacts (Marshall 1989). Therefore, a useful overview of these six major sources considers their comparative strengths and weaknesses (see Table 4.4) as follows.

investigator to address a broader range of historical, attitudinal, and behavioural issues. Obviously, the most important advantage presented by using multiple sources of evidence is the development of converging lines of inquiry. Any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode.

In addition, Patton (1987) discusses four types of triangulation in carrying out evaluations – those being the triangulation: (1) of data sources (data triangulation), (2) among different evaluators (investigator triangulation), (3) of perspectives on the same data set (theory triangulation), and (4) of methods (methodological triangulation). The present discussion pertains only to the first of these four types, encouraging the researcher to collect information from multiple sources but aimed at corroborating the same fact or phenomenon. Figure 4.3 distinguishes between two conditions - when the researcher has really triangulated (upper portion) and when the researcher has multiple sources that nevertheless address different facts (lower portion).

Figure 4.3 Convergences and Non-convergence of Multiple Source of Evidence

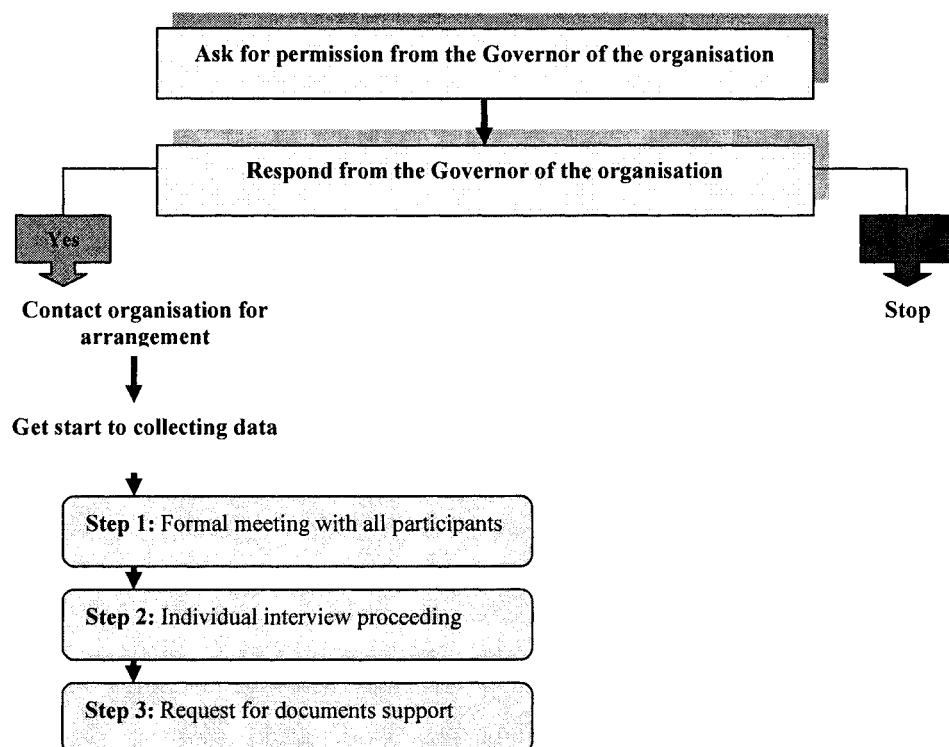


Source: Yin, 1996, p. 93

Obviously, data collection is the art of getting the right people to answer the right questions. Hofstede (1984a) and Brewer (1998) claim that Asian people, including Thais, have the characteristics of high-power-distance and collectivist societies; they prefer team-based work to individualised work (Brewer 1998), accept a superior's views (Hofstede 1984a, as well as doing what a superior requires {Cooper, 1994 #126). As a consequence the researcher had to make sure of getting strong support from top management of each organisation. It was necessary to request a formal meeting, with the top management in attendance as the

chairperson, in order to demonstrate that there was strong support for the research. It is expected that any information from participants will be accurate and sufficient; the procedures for collecting data are shown in Figure 4.4.

Figure 4.4 The procedure of data collecting



The researcher made contact by official letter with five organisations in the public sector that had agreed to be interviewed (see preliminary results of the questionnaire): Thai Plywood Company Limited (TPC), Metropolitan Electricity Authority (MEA), Electricity Generating Authority of Thailand (EGAT), TOT Corporation (Public) Company Limited (TOT), and

Thai International Airways (Public) Company Limited (THA); this was followed up by telephone. The official letter was sent to the Governor of the five organisations in order to obtain permission to make contact on a regular basis. The content of the formal letter consisted of the name of Northumbria University and Newcastle Business School, the researcher's name, the purpose of the study, and the ethical requirements as set out by the British Psychological Society; a list of questions for all participants was also sent. Within four weeks the researcher had gained the initial approval to undertake in-depth interviews from four organisations.

Thai International Airways (Public) Company Limited (THA) refused to allow interviews to proceed in spite of the fact that this organisation had originally agreed to be interviewed, it is important to note that "this organisation had politely refused interviews as a result of the organisation's policy. However they did state that the ABC project had been terminated three years ago due to a change in accounting policy".

At the first organisational visit meetings were arranged with top management in order for the researcher to introduce himself, to explain the research objectives and processes and to demonstrate that the research could be useful for their organisation in a variety of ways. Finally the researcher requested that top management select the future participants and

arrange formal meetings. There were three steps used by the researcher to establish the process for data collecting.

Step 1: Formal meeting with all participants

The formal meeting with all participants took place on the second organisational visit; a room and refreshment for the meeting were provided. Top management had themselves selected all of the participants and also arranged the first meeting. The purpose of this activity was to give the researcher a chance to get to know all participants. Also it was the first opportunity to let them know about the study, its objectives and other key points. At the same time, the researcher arranged individual interviews with all participants after the meeting ended.

Step 2: Individual interviews

The researcher arranged a meeting room for the interviews; refreshments were provided. Face-to-face interviews were used as the data collecting method as this had the advantage of flexibility in adapting and clarifying participants' responses. Before conducting interviews participants were informed that under the ethical rules they were in attendance voluntarily and that their data would not be used in an inappropriate way. Participants were asked to sign previously prepared "*Ethical Forms*". Personal interviews were conducted with the consent of the participants and were recorded on cassette; each interview took approximately 120 minutes.

The researcher conducted interviews using “*semi-structured approach*” as a research instrument. The interview questions were developed from Cooper (1990) and focused on the implementation process of ABC; during interviews the concept of an ABC implementation process was explained to the interviewees.

There were four groups of interviewees; they consisted of Chief Executive, Director of Finance and Accounting, Project Coordinator, Team Members and Users (for example Senior Manager, Purchasing Manager, Marketing Manager, Accounting Manager or Financial Manager). Here are detailed reasons why the researcher interviewed these groups of people and the nature of questions asked.

Group A: Chief Executive

These persons have the responsibility for decision-making in relation to the organisation’s policies, including whether or not to implement an ABC system. Also, it would be important for the chief executive to demonstrate strong support for the system in order to ensure success.

Questions for Chief Executive: the rationale for these questions is that the researcher expects to collect information from each organisation in terms of its objectives, problems or

motivation, the expected benefits from ABC implementation and any subsequent improvements. The questions to be asked are:

- Q 1: What were the objectives of the ABC implementation?
- Q 2: What were the problems or motivation, which lead to the implementation of ABC?
- Q 3: What were the expected benefits from ABC implementation?
- Q 4: Have you seen any improvement after implementing ABC?

Group B: Director of Accounting

This group of participants has the responsibility for planning and implementing the ABC system in the organisation, from the strategic plans to the action plans.

Questions for Director of Accounting: the rationale for these questions is that the researcher expects to get information from each organisation in terms of the objectives, problems or motivation, support required, expected benefits of the ABC system, any improvements after implementation, and the lessons learnt as a result. The questions to be asked are:

- Q 1: What were the objectives of the ABC implementation?
- Q 2: What were the problems or motivation, which lead to the implementation of ABC?
- Q 3: Do you get the strong support from the top management?
- Q 4: Have you employed outside/ inside implementers/ facilitators?
- Q 5: What were the expected benefits of ABC implementation?
- Q 6: Have you seen any improvement after implementing ABC?
- Q 7: What were the lessons learnt from the implementation of ABC?

Group C: Project Coordinator and Team Members

These persons are directly involved in the implementation process of an ABC system from the beginning until the end of the action plans.

Questions for Project Manager and Team Members: the rationale for these questions is to obtain exact information on how ABC is implemented. The questions to be asked are:

- Q 1: Please describe your role in the implementation of ABC.
Q 2: Please describe the ABC implementation process.
Q 3: How did you implement an ABC system in your organisation?
- Initial Stage***
- Q 1: How did you select the team members?
Q 2: How did you organize an ABC seminar?
Q 3: How did you design an ABC system?
Q 4: How did you train an ABC system?
- Implementation Stage***
- Q 1: How did you formalize project scope?
Q 2: How did you gather the data (create the cost database)?
Q 3: How did you identify activities and cost driver?
Q 4: How did you build the model (Software)?
Q 5: How did you do reporting and recommendations?
Q 6: How did you integrate with management processes?
Q 7: What problems were encountered during implementation?
Q 8: What were the lessons learned from the implementation of ABC?

Group D: Users

The researcher believes users should gain benefit from an ABC system. Interviewing this group will provide information on the usefulness of ABC information.

Questions for Users: the rationale for these questions is that the researcher expects to get the information in each organisation in terms of the feedback on implementation of an ABC system in the organisation. The questions to be asked are:

- Q 1: What were the expected benefits of ABC implementation?
Q 2: Have you got the benefits you expected?
Q 3: Have you seen any improvement after implementing ABC?
Q 4: Can you identify any deviation from the original objectives during the actual implementation of ABC system?
Q 5: How have you used ABC information for planning, decision making and performance measurement in your job?

Step 3: Request for documentary evidence

The researcher requested internal documents from all organisations in order to support the research. This consisted of: Organisation Chart; Job Description; Accounting System Manual; Annual Report; Sample of ABC Process Flow-chart; Sample of the ABC Report; Internal Non-financial Information; Newsletters and so, on as shown in Table 4.5.

Table 4.5 Documents support

Items	TPC	MEA	EGAT	TOT
Organisation Chart	✓	✓	✓	✓
Job Description	×	×	×	×
Annual Report	✓	✓	✓	✓
Accounting System Manual	×	✓	✓	×
Sample of ABC Process Flow-chart	✓	✓	×	×
Sample of the ABC Report	×	×	×	×
Internal on-financial Information, Newsletters etc.	✓	✓	✓	✓

4.3.2.2. Data analysis for objective 2

NUDI*ST, a software package for analysing qualitative data, was initially considered for the analysis of the data from the interviews. However, there have been both technical and intellectual problems identified which have suggested that its application may be inappropriate. Unfortunately, NUDI*ST has not been made available in the Thai language yet; the software could not be used because of the obvious problems of loose translation, loose emphasis, loose sequence and consequently poor quality and unreliable results.

The final stages the results and findings of a case study need to be brought to closure. This step is called reporting, with numerous forms of reports being available, and the typical case study report being a lengthy narrative (Yin 2003a, p. 141); for this purpose the researcher is going to use “*content analysis*” as an analysis method. According to Titscher (2000) content analysis is the only method of text analysis that has been developed within the empirical social sciences, and it is the longest established method of text analysis (Titscher 2000, p. 55). Babbie (2001, p.304) also mentioned that content analysis can be defined as “the study of recorded human communication”. Further, Bryman (2007, p. 303) cited that content analysis is a research technique and becomes applicable to many different forms of unstructured information, such as transcripts of semi – and unstructured interviews (e.g. Bryman, Stephens, and A Compo 1996) and even qualitative case studies (e.g. Hodson 1996). The steps of this method are shown as follows:

- *Data Preparation*; All data which is collected from interviews will be recorded on audiotape and transcribed in order to file a permanent record; transcription will be sent back to interviewees in order to confirm the accuracy.
- *Coding the Data*; The researcher determines the concepts of the research and foundation study. Draft topics will lead to the formation of “*thinking units*” (first attempt to categories). Subsequently each thinking unit will be adjusted and to related to each other, followed by classification into categories. Each category will be adjusted according to the interview questions.
- *Extracting the Data*; Any data that matches with other categories will be highlighted and cited together. Interview transcripts which do not provide clear data will be discarded and the focus will move to the next transcript. After all interviews have been analysed new categories will be highlighted from the first to the last interviewee. This step will be repeated until all categories are finished. The reason for doing this is to prevent confusion and concentrate on the data of each category. During this process any interesting issues arising will be allocated to a sub-category. On completion the researcher will consider adding, changing or eliminating categories.
- *Conclusion*; Highlighted categories will be compiled for drawing the overall analytical conclusion to the research.

4.3.2.3. Comments on the interviews

The researcher conducted face-to-face interviews as the data collection method. Four groups of interviewees participated, namely, The Chief Executive, The Director of Finance and Accounting, The Project Coordinator and Team Members, and Users. These participants had varied characteristics in term of perceptions, attitudes, age, educational background, work experience, and came from different management levels in the organisation. Two important factors had to be considered before the interviews were conducted. First, in term of the researcher himself, most Thais show very high respect to anyone with a doctoral degree, particularly somebody who has gained a scholarship from an organisation within Thailand or from elsewhere. Thais tend to think that such people must be very well educated, have very good personalities and be very mature, with very good reputations. Hence, it was very important for the researcher to prepare everything properly before starting to conduct the interviews; in other words, high expectations lead to high levels of pressure. So the researcher had to think hard and prepare a very strong strategy in order to collect the information needed. Difficulty was experienced because some participants cancelled interviews due to the fact that they were too busy or were unavailable for whatever reason. However the researcher did accommodate and make changes to interview schedule.

With all participants the researcher stressed from the start that the research should be of benefit to them as suggested by top management in the initial formal meetings. If the

participants were able to provide good and sufficient information this would represent a good chance for the organisation to solve some of present problems.

During the interviews many questions concerning ABC implementation processes were asked by participants rather than answering the questions put to them; they preferred to ask questions. In this matter, the researcher had to persuade participants to answer questions by promising to answer their questions after interviews. The researcher had to find other ways to probe and ask questions; in some cases the researcher used triangulation to confirm the answers from participants by comparing responses from the different participants where the scope of the question was the same, for example:

Chief Executive:

Question: How do you prepare the workers to get to know a new system such as the ABC system?

Answer: We have always arranged training programmes for our workers to improve their skill and catch up with new technology and the ABC system is one of our programmes that are provided for all workers at all level. We train our workers continuously because we have our own training centre.

Project Coordinator:

Question: Has the organisation provided the knowledge of ABC concept to all level of co-worker that involve with the ABC system?

Answer: Indeed, TSE-031 has provided new knowledge such as about the ABC system to worker at every level. However, it can do this for just 20%, because this organisation has a great number of workers, so it is difficult to do this for all.

Team Member 4:

Question: How often have you been trained in knowledge of the ABC system?

Answer: Twice within two years, for 1-2 days each. This is too short to understand or make clear this topic. I have no idea about the ABC system and I think I scored only 20-30%.

As shown above, the scope of the questions was the same but varied responses resulted from individual groups. This led to questioning the level of knowledge of individual and groups, for example: it is appropriate for the workers, who are involved directly with the ABC system, or isn't it?

This entire process led to the creation of "thinking units" being one of the most important steps of content analysis, for example:

Figure 4.5 Example of Thinking Units

Data Preparation	Extracting the data that category as sub-factor (SF)	Extracting the data that category as main factor (MF)
We have always arranged training programmes for our workers to improve their skill and catch up with new technology and the ABC system is one of our programmes that are provided for all workers at all level. We train our workers continuously because we have our own training centre.	<ul style="list-style-type: none"> - Provided training adequately and continuously - Providing education, particularly of ABC systems 	- Education and training
Indeed, TSE-031 has provided new knowledge such as about the ABC system to worker at every level. However, it can do this for just 20%, because this organisation has a great number of workers, so it is difficult to do this for all.	<ul style="list-style-type: none"> - Providing education, particularly of ABC systems - Size of organisation is too big 	<ul style="list-style-type: none"> - Education and training - Problems with ABC implementation

4.4. Rules on Ethics and Confidentiality

Before conducting the questionnaire survey and interviews, the ethical guidelines set out by the British Psychological Society were achieved to preserve the rights; liberties and safety of the participants. In addition, an information sheet, including the name of Northumbria University and Newcastle Business School, was prepared to explain the purpose of the study and the ethical rules and then given to each participant as an attachment to the formal letter and questionnaires (see Appendix A). The participants were informed that under the ethical rules, they were there voluntarily and no risks would occur with their data.

Moreover, for administrative purposes the questionnaires were coded. Access to the codes was restricted to the researcher. The personal interviews were conducted with the consent of the participants. Before conducting the personal interviews, the participants were informed as to the objectives of this study and the ethical rules. Also, the completed questionnaires of the survey and transcripts of the personal interviews are kept in the secure place at Northumbria University under the researcher's control and are available only to the researcher and supervisors. The interview tapes were cleared after transcription.

In addition, the results of this study are only reported in aggregate form so as to prevent the identification of individual responses from the participants.

4.5. Summary

The methodology and the research process have been presented from the beginning to end (see Figure 4.1). I have chosen survey research, based on the use of mail questionnaires, as my research strategy for the first objective of my research study. This is because, firstly, I have known the specific data I need, and secondly, they can be done from a single location (Thailand). It can be stated that the first objective of this research has been achieved. Also, the detailed literature reviews of ABC and a brief review of ABC in general have been completed (see Appendix A). These reviews are included in the articles, and have been presented in a conference during 2001-2007. From this point, it will be extended to the second objective.

Therefore, since I have known exactly what sort of data I need, the quantitative methods are the most appropriate choice for my research study (see Figure 4.1). Moreover, the aim of this chapter is to offer a critique of several research methods together with the associated data collection and analysis techniques, so as to facilitate the most appropriate choice of research methods for this research.

Chapter 5

Preliminary Results

We should all be concerned with the future
Because the future we will all have to spend the rest of our lives there.
Charles F. Kettering

5.1. Introduction

The purpose of this aim to report the findings of the survey in the first stage of this research. The first stage aims to report the picture of cost accounting systems, in term of the characteristics of the organisation, the type of business, the number of employees, total annual turnover or budgetary, cost accounting system information and an ABC system in the Thai organisations.

5.2. Research Methodology

This survey was carried out by mail questionnaire and the questionnaires were returned in one month time. We selected the mail questionnaire method because it is a well-established research method. Moreover, the questionnaire is one of most popularly used survey data collection technique (Saunders, Lewis and Thornhill 2000).

The survey involved the use of semi-structured questionnaires that employed both of open and closed questions. The questionnaire was divided into three parts; part one: a general

information (about the organisations), it was included the characteristics of the organisation, the type of business, the location, the number of employees in the organisation, total annual turnover or budgetary, the main responsibilities on duty, the qualifications and the length of working in the organisation; part two: an cost accounting system information, it was included the current using of cost accounting systems and costing techniques, and the final part was aims to capture information about an activity-based costing (ABC) system in term of an ABC implementation, the in the Thai organisations.

The questionnaires consisted of nine pages (single sided page) and including a cover letter in two languages (English and Thai) because this survey took place in Thailand. The researcher explained the purpose of this survey and how to respond. Only one person from each organisation was selected. The mail questionnaire was sent to the Thai organisations, and was addressed to the Director of Finance and Accounting in each organisation. The respondent was given a month to return this questionnaire, and asking for the co-operating to interview for the future research. The prepaid self-addressed envelope was included with the questionnaire. The respondent was guaranteed complete confidentially. The sample included 438 Thai organisations, covered public and private sectors, including government (Thai State Enterprises), manufacturing, banking and investment IT and telecommunication, service, etc. in Thailand. The survey consisted of 438 mailed questionnaires posted to the Thai

organisations. A total of 86 responses were received, and giving the overall response rate of 20 percent.

5.3. Research Findings

The first preliminary survey by questionnaire has been conducted in Thailand to investigate the cost management accounting systems in Thai organisations in both the private and the public sectors. The results of the survey are reported in the figures below.

5.3.1. General Information

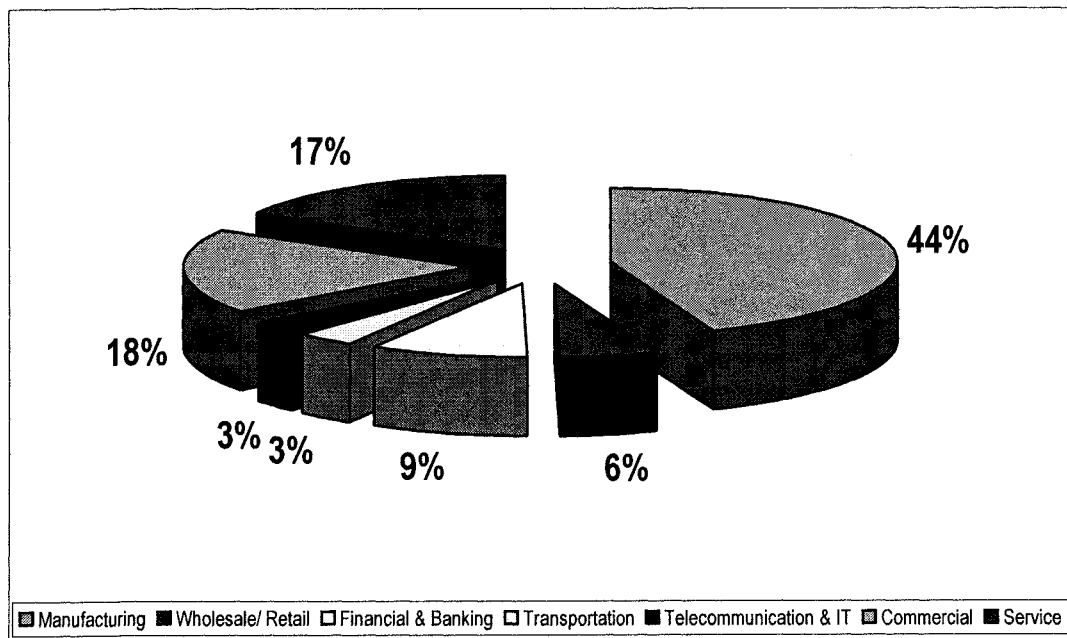


Figure 5.1 Sample size identified by industry

Figure 5.1 shows the sample size of the survey. 438 organisations (385 organisations in private sector and 53 organisations in public sector) have been selected as a sample size. It is identified as 44 percent is in the manufacturing industries, 18 percent is in the commercial industries, and 17 percent is in the service industries. A small number of some industries are 9 percent in financial & banking industries, 6 percent in wholesale/ retail industries, and 3 percent each in transportation industries and telecommunication & IT industries.

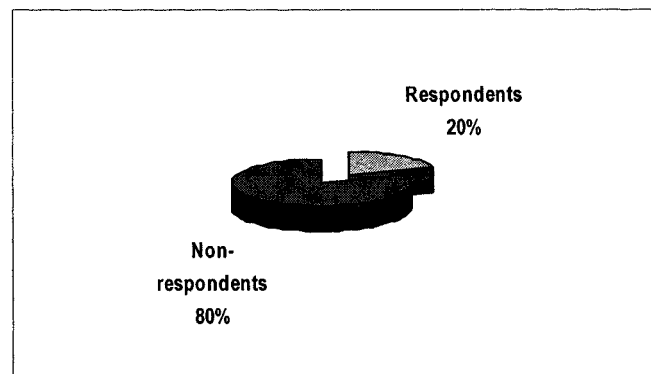


Figure 5.2 Overall response rates

Figure 5.2 reports an overall response rate of approximately 20 percent (for 86 organisations). The researcher received responses from one out of every five respondents, which indicates a slightly high response rate.

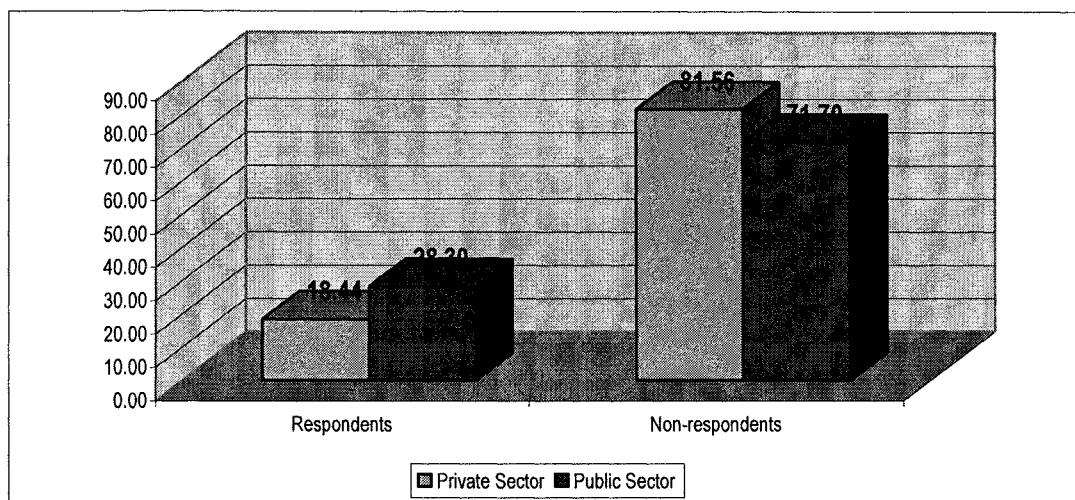


Figure 5.3 The response rates identified by sector

Figure 5.3 reports that a total of 86 usable responses were received. The response rate of the private sector is 18.44 percent (71 organisations) and the response rate of the public sector is 28.30 percent (15 organisations). Thus, the response rate from the public sector is higher than the response rate from the private sector.

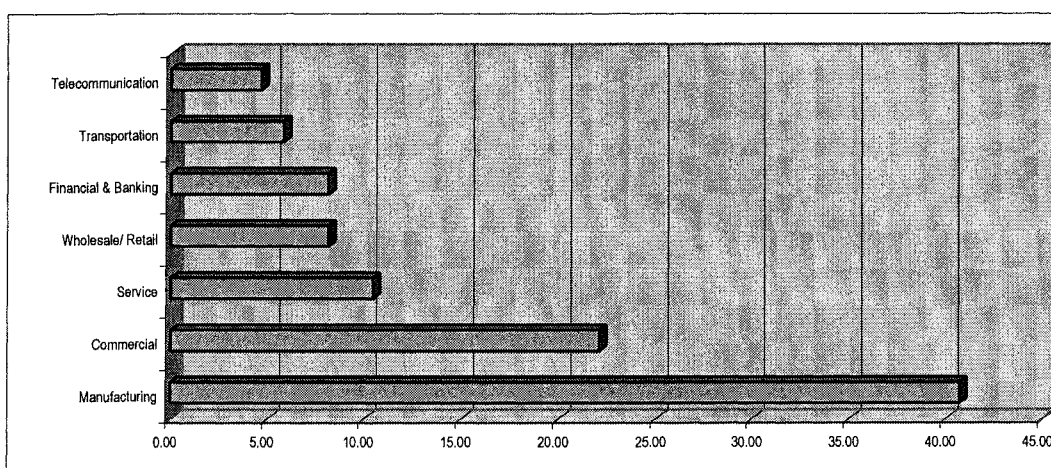


Figure 5. 4 Percentage of the overall respondents identify by type of business

Figure 5.4 shows the great variety of respondents identified by type of business. The majority of the overall respondents, 41 percent (35 out of 86 organisations) come from the manufacturing industries.

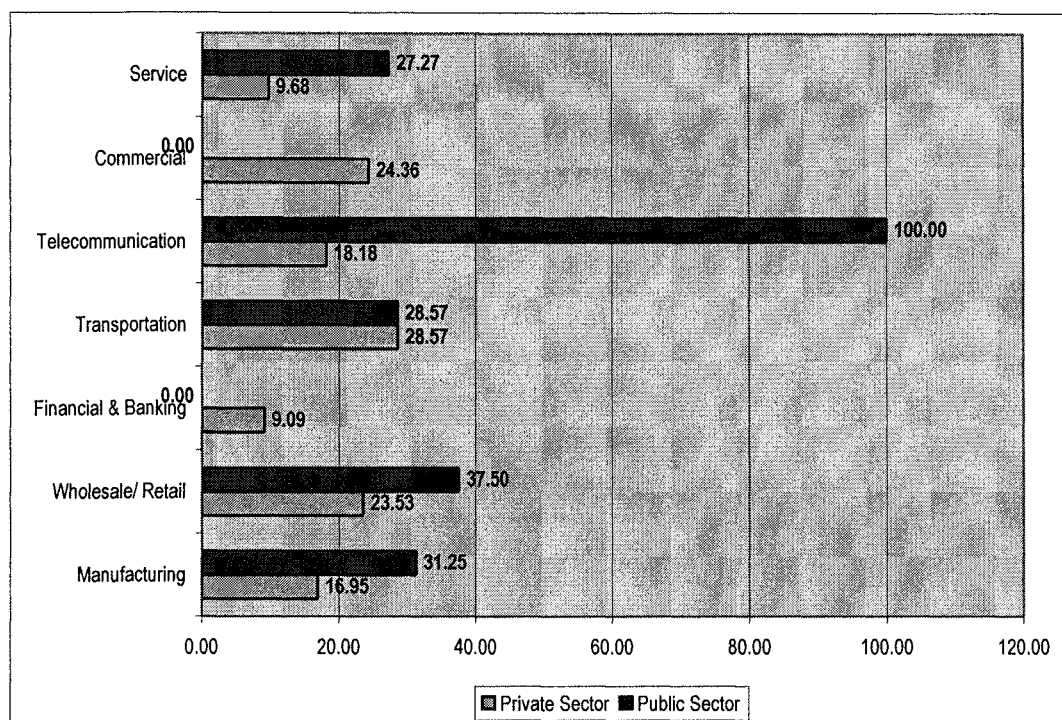


Figure 5.5 Percentage of the respondents identified by sector and type of business

Figure 5.5 shows the response rates by sector and by type of business. The private sector shows that the majority of respondent, approximately 30 percent come from transportation industries. Concerning, the public sector shows that the majority of respondent, 100 percent

come from the telecommunication & IT industries. It also finds that the high response rate is related to the number of questionnaires, which were sent to organisations in each sector.

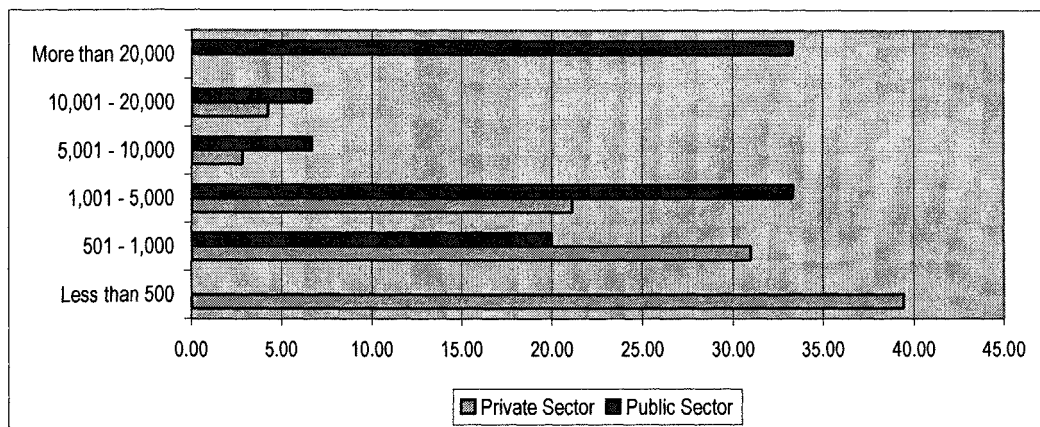


Figure 5.6 Number of employees in the organisations

Figure 5.6 reports the number of employees in the organisations surveyed. Two thirds of the organisations in the private sector are small firms with less than 500 employees, and one third are middle-sized. A small number of the organisations are large firms. On the other hand, two thirds of the organisations in the public sector are large firms with more than 20,000 employees and one third are middle-sized. None of them are of small size. The majority of respondents in the private sector come from the small organisations, while the majority of respondents in the public sector come from the large organisations.

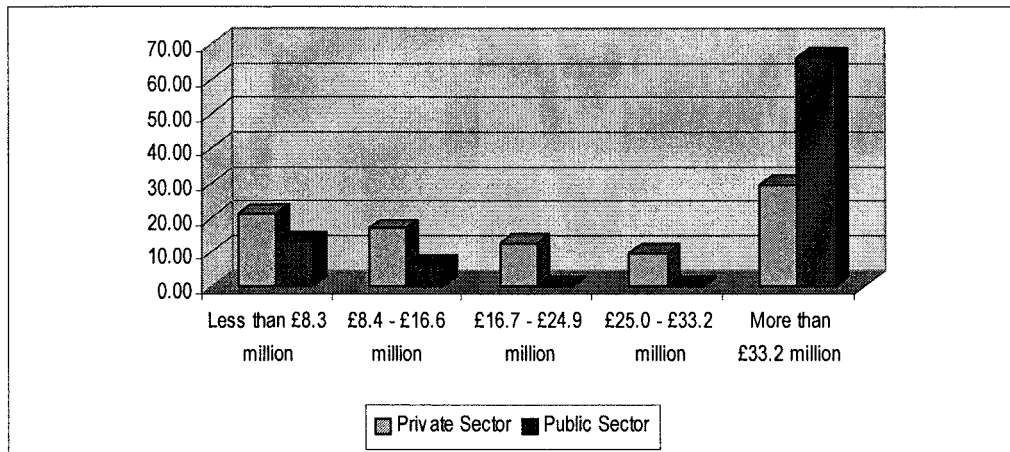


Figure 5.7 An annual budget in the organisations

Figure 5.7 shows the annual budget in the surveyed organisations. Two thirds of the public sector organisations are classified as large businesses due to their having an operating budget in excess of 33.2 million pounds. The largest category of private sector organisations can also be thus classified. In addition, one third of the public sector organisations and a majority of the private sector organisations are classified as small businesses because of their lower operating budgets.

5.3.2. Cost Accounting Systems Information

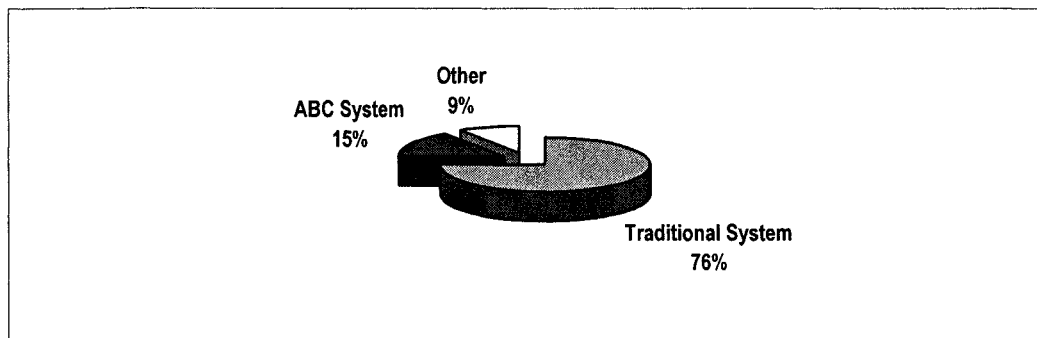


Figure 5.8 Cost Accounting Systems in Thai organisations

Figure 5.8 shows the cost accounting systems, which have been used, in Thai organisations. The majority the organisations are still using the traditional system (e.g. standard costing, absorption costing, variable costing and other techniques). In terms of ABC system, it still represents only a small proportion of cost accounting systems used in Thai organisations.

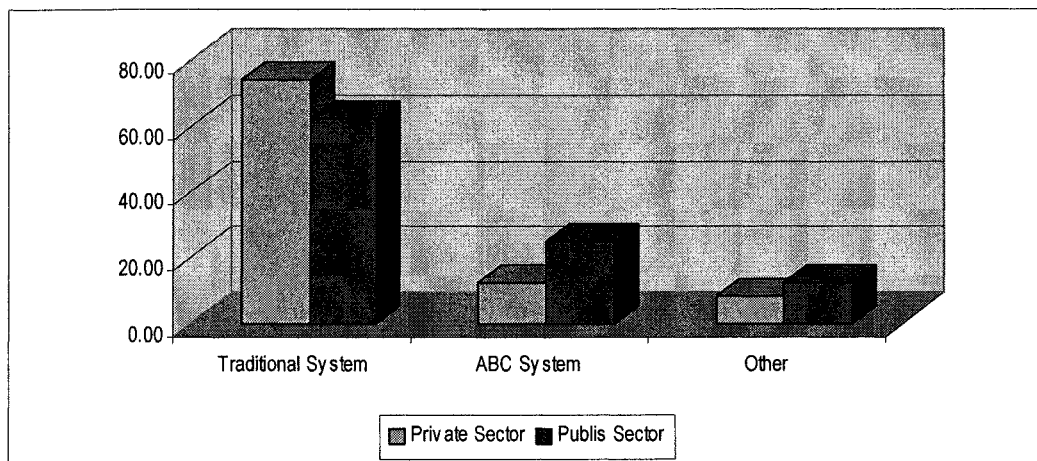


Figure 5.9 Cost Accounting Systems in Thai organisations by sector

Figure 5.9 shows cost accounting systems in Thai organisations identified by sector. The majority of Thai organisations in both the private and public sectors indicate that they are using the traditional systems in their firms. The adoption of the ABC system in Thai organisation is low overall, as shown in Figure 8. In contrast, it is found that the adoption of the ABC system in the public sector is much higher than the adoption of ABC in the private sector. A small number of the organisations in both the private and the public sectors are using the other systems.

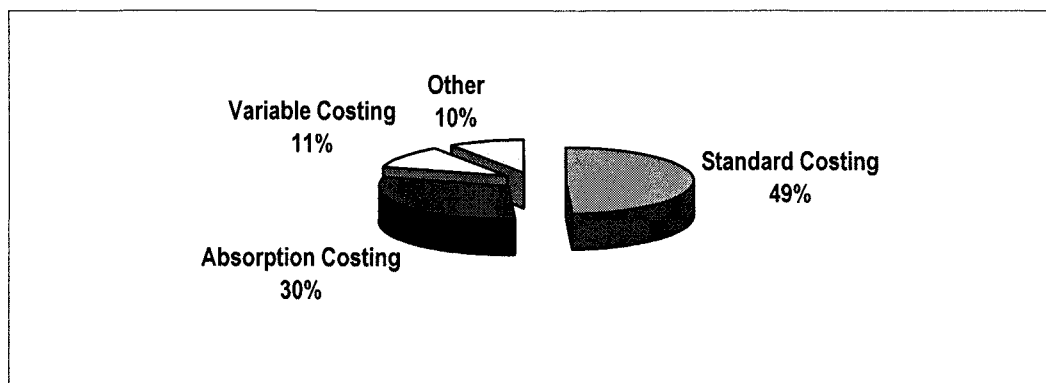


Figure 5.10 Cost accounting techniques of Thai organisations in general

Figure 5.10 reports the percentage of different costing techniques used by Thai organisations in general. There are two types of cost accounting techniques (standard costing and absorption costing) that are the most popular for use in Thai organisation in overall, representing 49% and 30% use respectively.

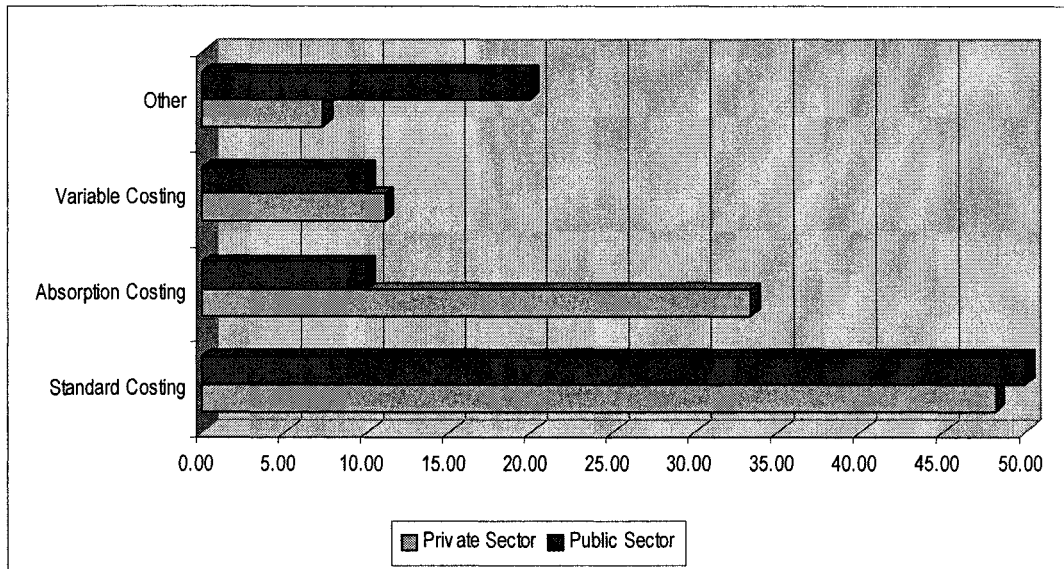


Figure 5.11 Cost accounting techniques in Thai organisation identify by sector

Figure 5.11 shows how cost accounting techniques in Thai organisations differ by sector. It appears that Thai organisations are predominantly using the traditional system, as shown in Figure 8. Approximately half of Thai organisations in both the private and the public sectors select the standard costing as a cost accounting technique.

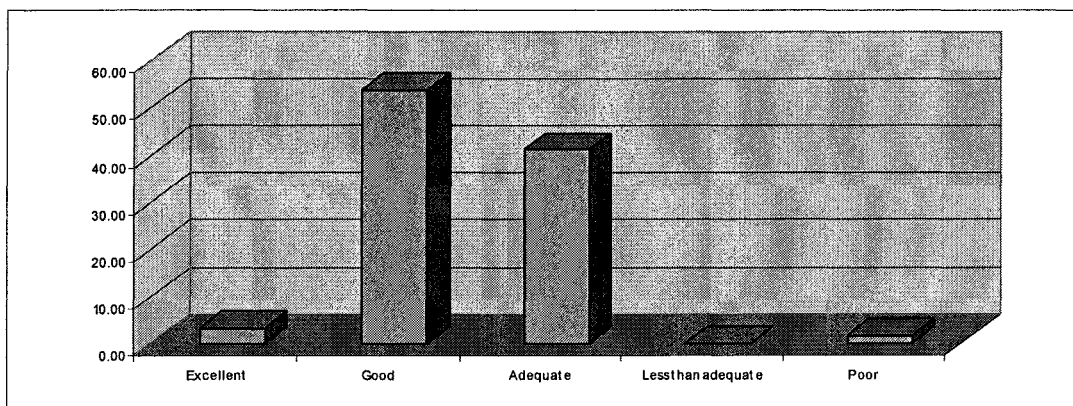


Figure 5.12 The quality of cost information in Thai organisations in general

Figure 5.12 shows the quality of cost information in Thai organisations. It appears that their current accounting system provides good and adequate cost information for most of the firms. On the other hand, a small number of firms indicate that their current accounting system provides poor and less than adequate information.

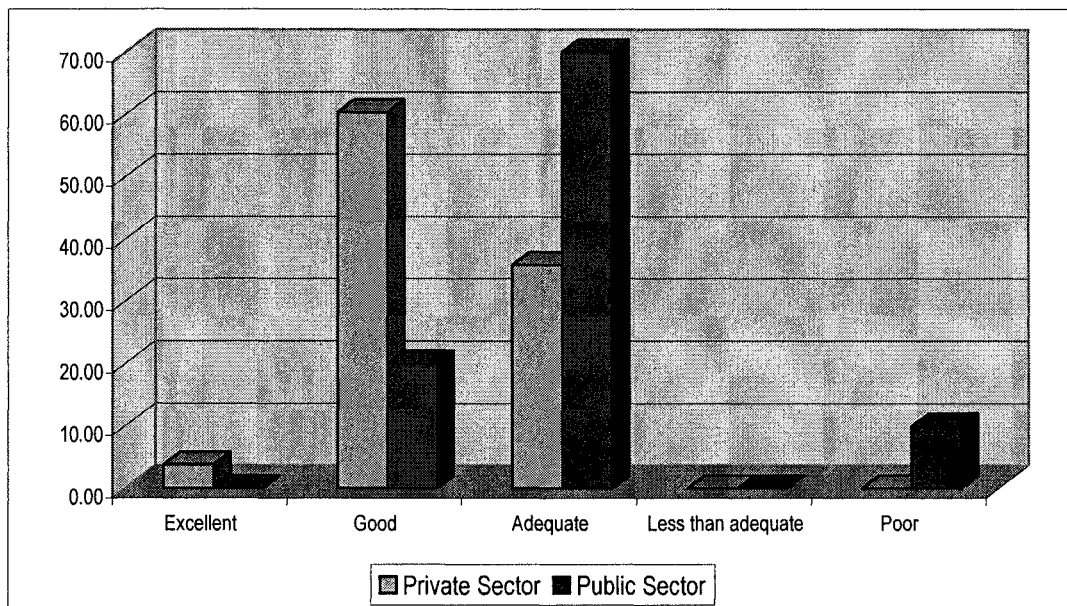


Figure 5.13 The quality of cost information in Thai organisations identified by sector

In contrast, Figure 5.13 shows the quality of cost information. The majority of organisations in the private sector indicate that the current cost information is good. In addition, the majority of public sector organisations indicate that the current cost information is adequate. In addition, a small number of respondents in both sectors indicate that the current cost information is either excellent, poor, or less than adequate.

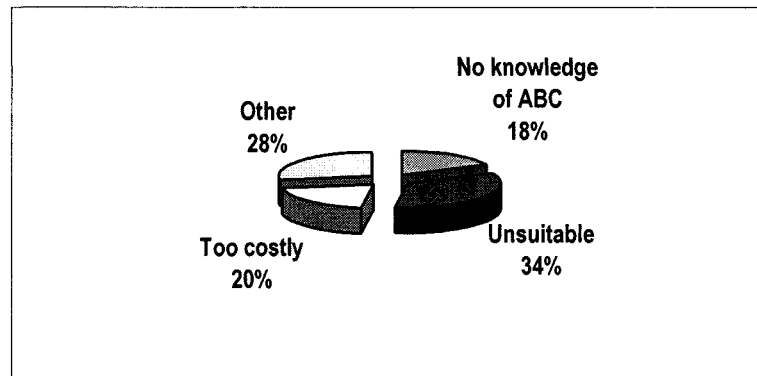


Figure 5.14 The reasons to deny an ABC system in Thai organisations in general

A figure 5.14 shows the reasons of the organisations for not using the ABC system as a replacement for traditional systems. It appears that the reasons are fairly evenly distributed. However, the majority of respondents indicate that an ABC system is unsuitable for Thai organisations in general.

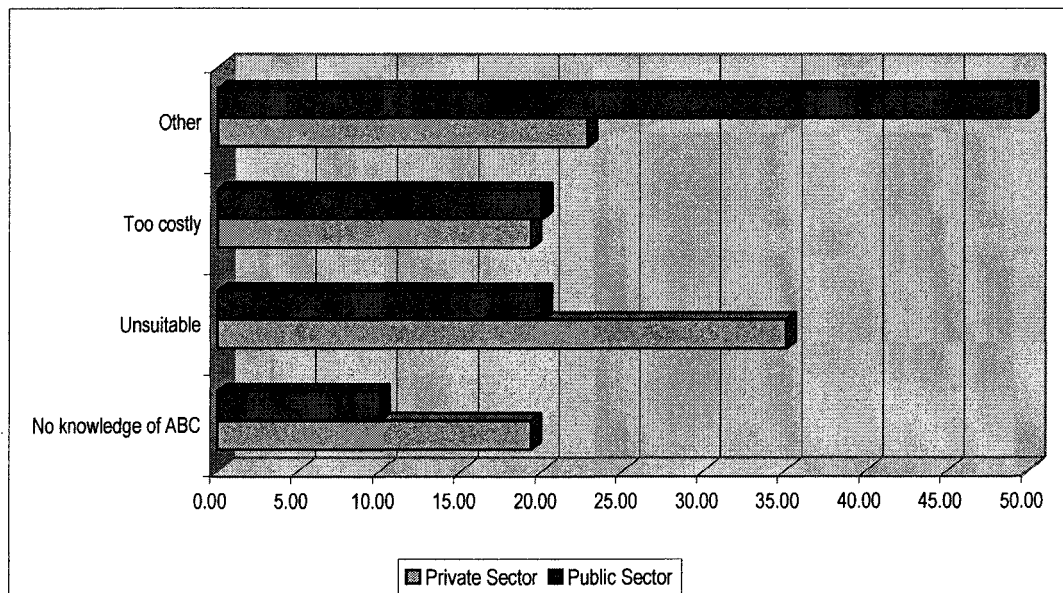


Figure 5.15 The reasons to deny an ABC system, identified by sector

Figure 5.15 shows the reasons given by organisations for denying an ABC system, identified by sector. One third of private sector organisations indicate that an ABC system is unsuitable. In the same way, a half of public sector indicates that an ABC system is denied for other reasons.

5.3.3. Activity-Based Costing (ABC) System in Thai Organisation

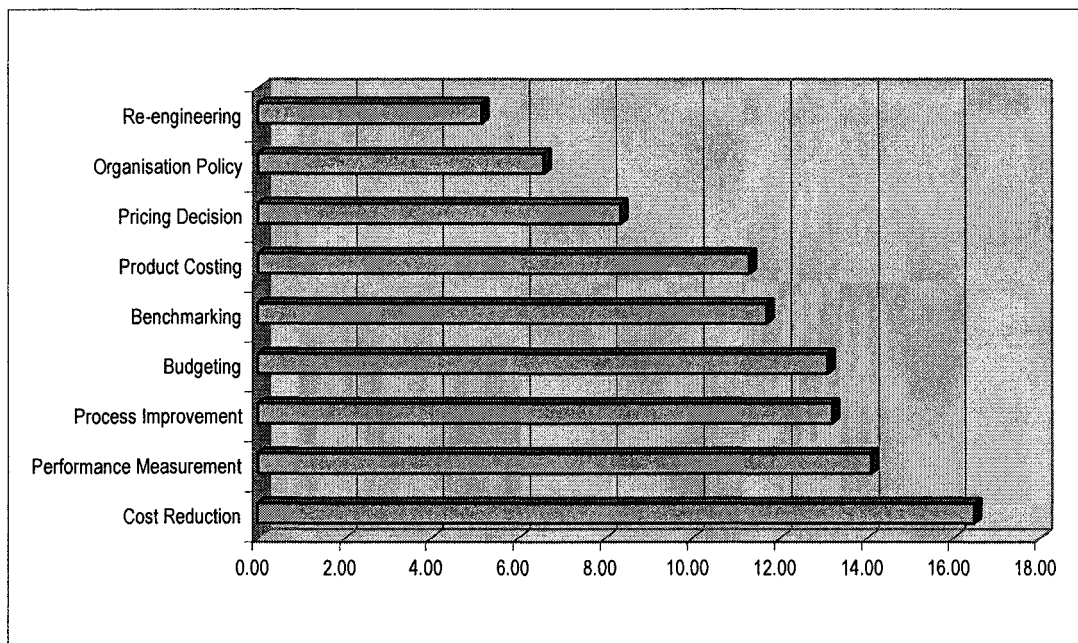


Figure 5.16 The purposes of the organisations that have implemented an ABC system

Figure 5.16 reports the most common characteristics that caused Thai organisation to consider an ABC system. In contrast, the most important purpose deals with the cost

reduction. In addition, the purpose of performance measure, process improvement and budgeting are not much difference. A small proportion shows that the pricing decision, organisation policy and re-engineering are the purposes to implementation an ABC system in their organisations.

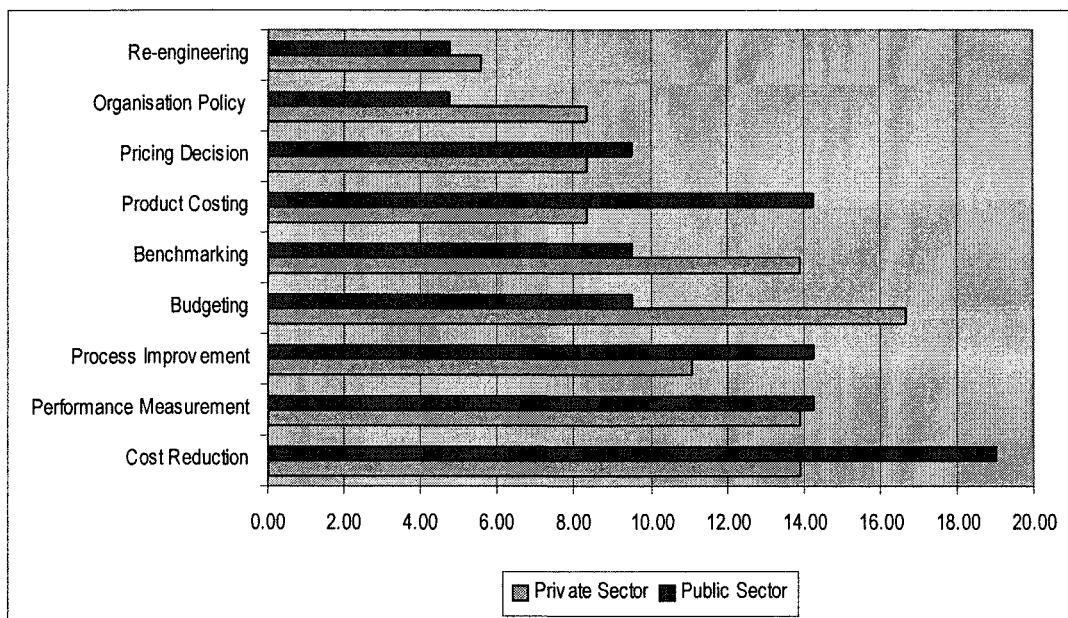


Figure 5.17 The purposes of the organisations that have implemented an ABC system identify by sector

Figure 5.17 shows the purposes of the organisations that have implemented an ABC system identified by sector. It indicates that the budgeting is the main purpose in private sector, and the cost reduction is the main purpose in public sector. In term of performance measurement, pricing decision and re-engineering are not much difference in both sectors. On the other

hand, it indicates that the organisation policy is extremely difference between private and public sector.

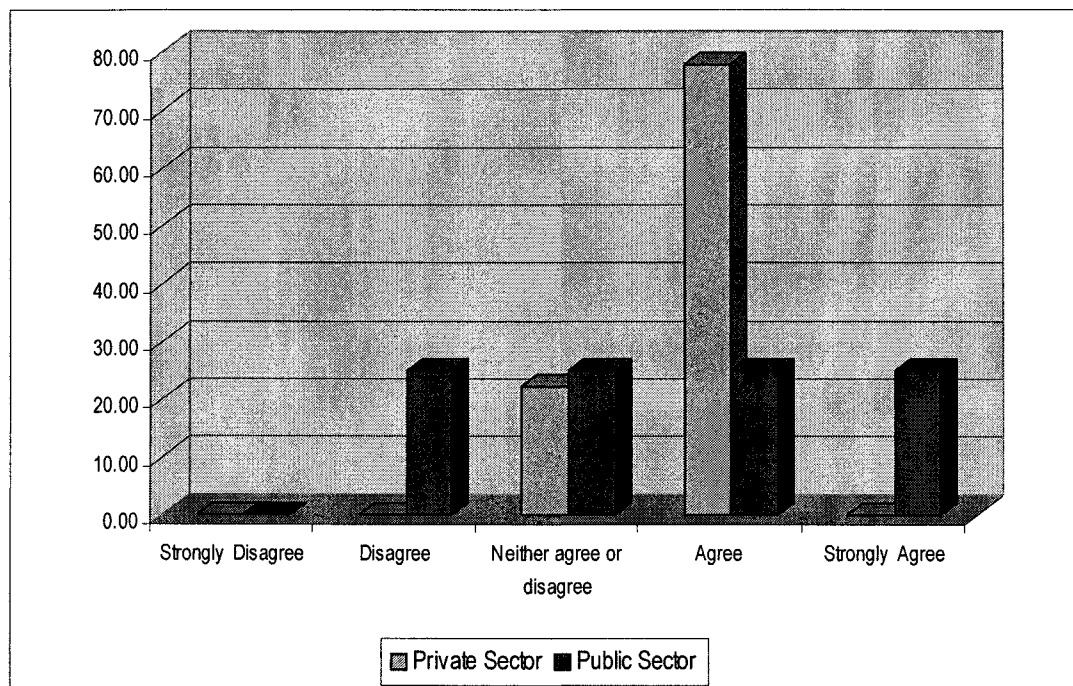


Figure 5.18 Degree of achievement of an ABC implementation in Thai organisation identify by sector

Figure 5.18 shows the degree of achievement of ABC implementations. Both of sectors agree that they are achieved its purpose. Interestingly, it also appears that the private sector is more highly achieve than the public sector.

5.4. Discussions

This is the first survey of management accounting systems, in term of “cost accounting techniques” in Thai organisations. The major survey outcomes are categorised as follow:

5.4.1. General Information

The survey questionnaire was mailed to four hundred and thirty-eight organisations and covered all industries in both the private and the public sector. Eighty-six useable responses were received. The overall response rate is 20 percent. Indeed, the researcher appreciated this rate. Interestingly, the researcher has been conducting the research in several areas. It was quite difficult to conduct and contact the organisations directly, and the period of time was not good because the survey was conducted during the same period of doing an annual report (for the year ended 2001) of a great number of organisations in Thailand. Moreover, perhaps the survey of this topic is too sensitive for the organisations, particularly Thai organisations, in terms of disclosing or providing any information to outsiders. Nevertheless, the researcher still got a high response rate by overall.

The main proportion of overall respondent, identified by industry, comes from the manufacturing industry. Forty-four percent of the organisations samples (193 out of 438 organisations) are in this industry and the survey is involved with the manufacturing industry directly. It shows approximately a 41 percent response rate in this industry.

The response rate of the private sector does not differ much by industry. The largest proportion of respondents is in the transportation industry. Approximately 40 percent (3 out of 7 organisations) in this industry responded to the survey. On the other hand, the response rate of manufacturing industries is only 17 percent; although this industry represents the highest proportion of the sample. Yet, this is unsurprising, because some information is too sensitive to provide to outsiders. Moreover, a similar response rate from the commercial industries and wholesale/ retail industries show approximately 25 percent in each industry. The high percentage of those industries is not surprising, because there is not much information, which is involved with the cost accounting information in such organisations. This perhaps facilitates answering the survey questions. Interestingly, the financial and banking industries and service industries exhibited a low response rate. This may represent the same general results as in other industries.

In the public sector, it is quite interesting that the telecommunication and IT shows a 100 percent response rate (with both of only two organisations responding). It is unsurprising because both of them are in the process of merging in the near future, and one of them is currently implementing an ABC system. So, presumably they can both benefit from their participation in this survey. An approximately 40 percent response rate characterised the wholesale/ retail industry, while both the transportation and service industries showed a nearly 30 percent rate of response. The public sector is characterised by a higher rate of

response in all industries because all information in the public sector can legally be disclosed to outsiders. On the other hand, it is very interesting that no data are available from the financial and banking industries and commercial industries.

In general, it can be concluded that the majority of the respondents had very good qualifications (for example, one third have the masters degree), and have been working for their organisations for more than ten years. It is also possible that they are involved with the development of management accounting systems in their organisations. So, the researcher has every reason to believe that any information from the survey has been carefully done by the professionals in each organisation. The researcher also asked the respondents if they would be interested in the findings of this research, with the result that a hundred percent of respondents wanted to obtain the results. Accordingly, it is not surprising that the response rate is generally high and of good quality as well.

5.4.2. Cost Accounting Systems Information

The survey results show that a huge number of Thai organisations (approximately 80%) are still using the traditional accounting system, as show in Figure 8. Moreover, it also indicates that approximately half of Thai organisations select the standard costing and one third select the absorption costing as a cost accounting technique. Overall, there seems to be more

similarity than difference in management accounting systems when comparing the private sector and the public sector.

In contrast, the cost structure in Thai organisations is an important factor affecting the appropriateness of cost accounting systems. This is due to the fact that direct materials and direct labour are the largest proportion of the cost structure and a relatively small proportion is represented by overhead costs, in terms of calculating the total cost in Thai organisations. As a small proportion of overhead cost, it is possible to note that it is not a significant issue for discussion or re-thinking because their control over the overhead cost is already adequate. Moreover, the questionnaire also asked the respondents to rate the quality of cost information. The majority of respondents indicate that the current cost accounting systems provides good or adequate cost information. Only 10 percent of the sampled organisations indicate that the current cost information is poor.

In addition, the questionnaire also asked the respondents about the reasons for denying an ABC implementation in their organisations. It may be disconcerting to note the majority of the respondents indicated that the main reason for Thai organisations to deny the use of the ABC system is because it is unsuitable. In terms of its assumed unsuitability, the researcher has strong reason to believe that the most important reasons deal with the cost structure in the organisations. Interestingly, approximately 30 percent of the respondents report that they

have not considered an adoption of ABC because of the other reasons. The possible reasons for this may include factors, which are related to organisational behaviour, financial support, and particularly, the management support in the organisation. Moreover, approximately 20 percent of the respondents report that they have denied this system because it is too costly and because they have no knowledge of ABC. It is perhaps not surprising that it is a common reason because “if the organisation still appreciates the current costing systems, why would they have to think about new alternative costing systems, or pay for something for which the benefits are unclear and uncertain”.

As identified by sectors and industries, the implications of these findings are discussed here. In the private sector, nearly 40 percent of the organisations indicate that an ABC system is unsuitable. In the manufacturing industries, approximately 40 percent indicate that it is unsuitable and nearly 30 percent indicate that they have no knowledge of ABC. This is very interesting indeed because ABC has been demonstrated to be successful over the course of the last decade. It is possible to conclude that Thai organisations have never changed their cost structure as the discussion above indicates. Thus, they are still using the traditional systems as shown in Figure 8. Other industries report in the same way – that this system is not only unsuitable, but it is also too costly.

In addition, half of the public sector organisations indicate that an ABC system is denied for other reasons. The manufacturing industries report that it is unsuitable as well as too costly. In contrast, the wholesale/ retail industries, transportation industries, and service industries indicate that they have not considered adoption of ABC because of other reasons. Unfortunately, it is impossible to explain more about these “other reasons,” due to the limitation of the questionnaire.

Interestingly, both the private and the public sectors reported that an ABC system is unsuitable for telecommunication industries. As a result of these, it would be expected that the traditional accounting systems are more suited to Thai organisations in both the private and the public sectors.

5.4.3. Activity-based costing (ABC) system in Thai organisations

The adoption rate of the ABC system in Thai organisations is not high (approximately 15 percent overall), as shown in Figure 8. It is also found that nearly 13 percent of the organisations in the private sector have adopted ABC, and 25 percent of the organisations in public sector have adopted ABC. Interestingly, the adoption of the ABC system in the public sector is much higher than the adoption of ABC in the private sector, as shown in Figure 9. Overall, the most important reason for the adoption of the ABC system deals with the cost reduction of using the system. Reasons related to the purpose of the performance measure,

process improvement, and budgeting do not seem to have made much of a difference in the decision not to adopt the system.

However, a different interpretation is given if the responses are broken down by sector. In the private sector, budgeting is the main reason for adopting an ABC system. On the other hand, in the public sector, cost reduction is the main reason for adopting an ABC system. The most significant reason in both the private and the public sectors indicate that they have adopted an ABC system for performance measurement purposes. This result is unsurprising because one of the main benefits of this system is to increase the performance measurement, among other things. Moreover, it is found that the most unimportant reasons deal with the re-engineering purposes of the system. For this reason, it is a complex issue and requires the future study before any solid conclusions can be made.

As identified by industries, it is found that those who have considered the adoption of ABC tend to be on average larger organisations, as identified by a number of employees and annual budgets. However, it cannot assume that small organisations will necessarily reject the adoption of ABC in their organisations.

Furthermore, the questionnaires also asked the respondents whether they agree that the purposes for an ABC implementation have been achieved. Interestingly, approximately 70

percent of the overall adopters agreed that their purposes are achieved. On the other hand, it should be stressed that if we compare by sector, the degree of achievement in the private sector is much higher than the degree of achievement in the public sector, despite organisations in both sectors having received strong support from the top manager. For this reason, the researchers obtained some information from the ABC experts in Thailand by telephone interview. The main reason for resistance against using the ABC system in public sector is the resistance of the staff in the organisation as well as the organisational structure.

The issue of interest is why a small number of Thai organisations have adopted an ABC system, while on the other hand a great number of Thai organisations have not yet adopted. Moreover, it is surprising that the rate of adoption of the ABC system in the public sector is much higher than the private sector. As discussed above, the possible reasons are (1) ABC is unsuitable for the firms, (2) the high costs of implementing the system, (3) the system takes up a lot of the accountants' time, (4) the resistance of staff in the organisation or negative impacts on the organisational structure, (5) satisfaction with the traditional accounting systems, (6) no knowledge of ABC, (7) differences in the accountancy bodies in each organisation, and (8) inadequacies of software systems.

5.5. Conclusions

This research has three stages. This paper is the first stage, and it aims to report the perspectives of management of accounting in terms of “*cost accounting systems*” in Thai organisations in both the private and the public sectors. The paper reports the results of the questionnaire survey of 438 organisations in Thailand in both the private and the public sectors.

The survey reports that approximately 80 percent of Thai organisations are still using the traditional accounting systems. It confirms that the standard costing and absorption costing are the most popular to use as a cost accounting technique, representing 49 percent and 30 percent of what the respondents use respectively. It is apparent that their current accounting system provides good and adequate cost information. They have not considered or have ignored an ABC system because it is unsuitable, too costly, due to a lack of knowledge of ABC, and the other reasons as discussed above. Indeed, the results show that 15 percent of the respondents have adopted an ABC system. This is a similar adoption level (approximately 10-15 percent) as found in other countries, as shown in the introduction. Yet, those organisations that have adopted an ABC indicate that this system has a lot of benefits, particularly cost reduction, performance measurement and so on, as shown in Figures 16 and 17. They also report that approximately 70 percent of the adopters are satisfied because they agree that their purposes for the implementation of ABC have been achieved.

The limitations of this study are as follows: firstly, the problem of the questionnaire design that some answers are inadequate; secondly, although a number of respondents replied, and it is a quite good overall response rate, some industries are underrepresented among the respondents; finally, problems of conducting the research as discussed above. However, this limitation is not a significant problem for this research taken as a whole.

This study also contains suggestions for the next stage of this research. The second stage of this research will explore the ABC implementation in Thai organisations by in-depth interviews and organisational visits. The aim of this stage is to trace the procedure of the ABC implementation in Thai organisations, particularly in public sector, in order to evaluate the implementation process of ABC and identify the factors influencing this implementation in order to make suggestions for improvement.

Chapter 6

Case Study 1: Thai Plywood Company Limited

*Writing is the only thing that ... when I'm doing it,
I don't feel that I should be doing something else.*
Gloria Steinem

6.1. Introduction

Thai Plywood Co., Ltd. is a state enterprise operating under the Department of Agriculture and established as a limited company according to the Cabinet's resolution on November 4th, 1953. The company has operated under the civil and commercial code since June 24th, 1957 with capital of 80 million baht and with the Forestry Industrial Organisation the sole shareholder. The main intention of the company is to reform the usage of wood resources efficiently using the latest technology and to encourage people to use low quality wood to produce standardised products. This is with the aim to decreasing the use of valuable wood such as teak and instead aiding forest conservation (TPC 2006).

The company has resolute objectives establishing the following businesses:

- Forestry industry i.e. plywood, veneers and flush door, wood-distillation, wood conversion, and creation of construction equipment and other goods
- Lumbering and wilderness products

- Forestry products trading domestically and internationally
- Import and export equipment, machinery and other tools for the forestry industry
- Perform other business to support the company's objectives etc.

The company's objectives are determined according to the prospectus as stated above. In industrial business constant changes in economic, social, politic and technology have caused the company to add more objectives to the enterprise plan for 2004-2008 as set out below.

- The company shall expand its experimentation with seeds to classify and improve the seeds for higher economic value that accommodate the forest gardening according to official bureau policy.
- The company shall encourage private sector to plant fast growing trees on their land. The company shall then purchase the trees back when during the cutting period as part of the government's forestry development policy. Moreover, this will create jobs in local communities.
- The company shall produce standardised products efficiently enough to distribute domestically and internationally at a commercially viable price.
- The company shall improve the construction system and management process and also new industrial business in order to maintain production and distribution as well as developing all sections of the company. This is to serve the current social situation and changing environment including new technology adaptation as well.

Company's Policy

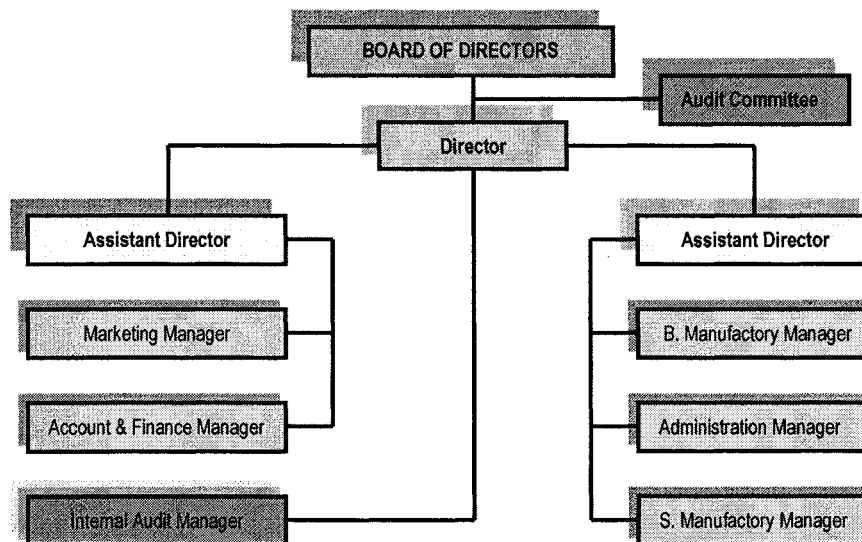
Thai Plywood has determined a policy that in turn serves the government's policy according to the nation's economic and social development plan. The company's objective according to the enterprise plan is as follows (TPC 2006):

1. The company shall urgently and continuously improve and develop its administration and procedures for greater efficiency and cost saving for the benefit of the government and the nation. The revenue, profit and dividends shall be delivered to the government and used to expand the company's business in both the short-term and long-term.
2. The company shall encourage the preservation of forest resources and develop the usage of wood within an integrated timber and forestry industry by constantly nurturing the company's forests for long-term benefit.
3. The company shall develop the practice of company deployment from state enterprise, making private investment possible.
4. The company shall improve the usage of the company's land in Bangkok and up countries for the company's income.

Besides these general policies, the company also possesses specified policies in areas such as marketing, manufacturing, raw material procurement, accounting and financing, and human

resources etc., therefore these policies are for effective achievement of the company's goal and designated policies (TPC 2006).

Figure 6.1 Organisational Chart of Thai Plywood Company Limited



Source: Annual Report of Thai Plywood Company Limited

6.2. Rationale of the ABC System at TPC

The board of directors recommends that the company improve its operational management, including its costing systems. The company's previous costing system (actual costing system) does not provide sufficient detailed information to meet the requirements of the management. There is a need for a new costing system that can provide better information

and useful management reports for the purposes of planning, decision-making, control and evaluation, resulting in more effective cost management. In addition to using responsibility accounting the company has developed a new costing system based on the activity-based costing (ABC) concept for cost allocation in order to provide more accurate product costing information. Since an ABC system itself can identify both value-added activities and non-value-added activities the company can eliminate or reduce non-value-added activities, its effectiveness and efficiency will be improved (TPC 2006).

6.3. Profile of Interviewees at TPC

Table 6.1 gives the profiles of the interviewees with whom the researcher conducted interviews at TPC. The details are shown as follows:

Table 6.1 Profile of Interviewees at TPC

Interviewee	Position in Organisation	Involvement with ABC	Educational Background	No. of years at TPC
TPC/CEO	Account & Finance Manager	Chief Executive	BBA. (Accounting)	30
TPC/PCO	Head of Accounting Division	Project Coordinator	BBA. (Accounting)	8
TPC/TM1	Accountant	Implementation team	BBA. (Accounting)	9
TPC/TM2	Accountant	Implementation team	BBA. (Accounting)	2
TPC/USER	Marketing Manager	User	BBA. (Accounting)	30

Note: Data drawn from face-to-face interviews

6.4. Research Findings

To form conclusions through the optimal utilisation of the data collected, the data analysis was conducted using both statistical and descriptive methods. After each interview the interview data were transcribed and notes prepared, being translated from Thai into English. In terms of statistical analysis the data was coded and extracted from the transcripts to produce a *“thinking unit framework”* in spreadsheet format for the *“content analysis”* procedure. From this, the most important factors for ABC implementation at TPC could be identified which is the main purpose of this research. The descriptive analysis and findings from the interviews are discussed below. However, a measure of reliability of the data is a serious concern so it was decided to apply the *“triangulation method”*, as mentioned in Chapter 5 (Research Methodology). Finally, the data analysis and the findings are shown as follows:

6.4.1. Demography

Five employees from this company were interviewed. These consisted of two employees at management level, namely the CEO, and USER, and three employees at operational level, namely PCO, TM1 and TM2, as shown in Table 6.1. The information in Table 6.2 shows the characteristics of the interviewees as follows:

Table 6.2 Characteristics of the interviewees

Characteristics	Categories	Number (N = 5)	Percentage (%)
Gender	Female	3	60.00
	Male	2	40.00
	Total	5	100.00
Educational background	Lower than bachelor degree	0	0.00
	Bachelor degree	5	100.00
	Master degree/ PhD	0	0.00
	Total	5	100.00
Qualification type	Accounting/ Finance	5	100.00
	Other	0	0.00
	Total	5	100.00
Country of graduation	Thailand	5	100.00
	Overseas	0	0.00
	Total	5	100.00
Number of years at TPC	Less than 5 years	1	20.00
	5-10 years	2	40.00
	11-20 years	0	0.00
	More than 20 years	2	40.00
	Total	5	100.00
Work experience in a variety of departments within the organisation	Work experience in a variety of departments	1	20.00
	No work experience in a variety of departments	4	80.00
	Total	5	100.00
Foreign work experience/training	No foreign work experience/training	5	100.00
	Foreign work experience/training	0	0.00
	Total	5	100.00
Knowledge of ABC before implementing ABC in the organisation	Excellent	0	0.00
	Good	0	0.00
	Adequate	0	0.00
	Less than adequate	5	100.00
	No knowledge of ABC at all	0	0.00
	Total	5	100.00

Note: Data drawn from face-to-face interviews

Table 6.2 shows the interviewees' profiles in terms of gender, educational background and work experience. The interviewees were three women and two men. The level of education achieved was a bachelor degree in Accounting/Finance from a Thai university. The interviewees had varied work experience: one of them (20%) had worked for the company less than five years, two (40.00%) had worked for the company for between 10-20 years, and two (40%) had worked for the company for more than 20 years. Besides this, twenty per cent

had experience in different departments, while eighty per cent had no experience in different departments. Interestingly, all the interviewees had less than adequate knowledge of ABC. However, it was apparent that all interviewees had very good qualifications and educational backgrounds as well as very good work experience, but their weak point was they had no foreign work experience or training at all.

6.4.2. Determining Factors

Data were drawn from five interviewees. They consisted of two employees at management level, namely; CEO, and USER and three employees at operational level, namely; PCO, TM1, and TM2, as shown in Table 6.1, 6.2. Content analysis was used in order to identify the most important factors for ABC implementation at TPC. Thirty-three sub-factors were found. Table 6.3 summarises the sub-factors raised by the five interviewees who were actually implementing ABC.

Table 6.3: Thirty-three sub-factors in implementing ABC raised by the five interviewees

	Number of Interviewees (%)
1. Decision making on pricing policy	100.00
2. ABC system could give clearer picture of the cost of services	100.00
3. External consultants	100.00
4. Increased effectiveness in the company	100.00
5. Cost allocation in manufacturing	100.00
6. Cost reduction	100.00

7. Provided training adequately and continuously	100.00
8. Computer systems	100.00
9. Resource adequacy (including: budgeting, manpower, and computer system)	100.00
10. ABC implementation led to some other developments in internal accounting systems	100.00
11. Level of progress of ABC implementation	100.00
12. Privatisation	100.00
13. Strong support from top management	100.00
14. Organisation culture	100.00
15. Control systems	80.00
16. Planning systems	80.00
17. Lack of staff motivation	80.00
18. Data collection by using standard forms	60.00
19. Stand-alone computer to support ABC system	60.00
20. Choice of activities and difficulty of identifying activities	60.00
21. Poor quality of information	60.00
22. Too much data collection	60.00
23. Activities and cost drivers determined	60.00
24. Keeping ABC information up-to-date	60.00
25. Reliable data	60.00
26. Selection of ABC team members (all from Department of Accounting)	60.00
27. Inadequate size of ABC team	60.00
28. Lack of production information	60.00
29. Lack of knowledge and training about ABC	60.00
30. Utility benefits of ABC output	60.00
31. Difficulty of identifying cost drivers	60.00
32. Increased workload	60.00
33. Stock valuation	60.00

Remark: The number of interviewees is shown in percentages as follows:

Number of Interviewees ($n = 5 = 100.00\%$)

Number of Interviewees ($n = 4 = 80.00\%$)

Number of Interviewees ($n = 3 = 60.00\%$)

Number of Interviewees ($n = 2 = 40.00\%$)

Number of Interviewees ($n = 1 = 20.00\%$)

As shown in Table 6.3, these sub-functions were mapped out in order to group them together. It is apparent that thirty-three could be manipulated into nine main factors. However, it is important to note that the researcher's own judgment was used in classifying the sub-factors into various kinds of main factors. The results are shown in Table 6.4.

Table 6.4 Thirty-three sub-factors could be manipulated into nine main factors

1. Top management support
2. Computer systems
3. Education and training
4. ABC team
5. Objectives of ABC implementation
6. ABC implementation process
7. Benefits of ABC implementation
8. Problems with ABC implementation
9. Level of progress of ABC implementation

6.5. Discussion and Conclusions

Of the five employees interviewed, different individuals had somewhat different perceptions. Analysis of the case study data has indicated that thirty-three sub-factors and nine main factors can be identified as shown in Table 6.3 and 6.4. The findings are discussed below.

6.5.1. Main Factor 1: Top management support

The researcher will start from this main factor “top management support”, because ABC systems cannot be successfully implemented without the wholehearted support of the top management. Obviously, top management support is seen as the most important factor influencing the success or failure of any new systems in an organisation (IMA 1993). There is a lot of preceding research that has reported how an essential and key factor influencing success in implementing ABC is top management support (Shield 1996). It is apparent that most of the TPC staff interviewed perceived that this factor was very important to the successful implementation of ABC at TPC. The interviewees had varying ideas about it; however, there are four sub-factors to support this main factor as follows:

6.5.1.1. Provided training adequately and continuously (Sub-factor No. 8)

Five interviewees (100.00% of the participants) raised this sub-factor. Indeed, providing new knowledge for employees in the company is the responsibility of top management. Moreover, improving employee understanding is one of the main factors in improved effectiveness in

the company. Besides this, another significant part of a successful implementation of ABC is training (Compton 1996).

Two interviewees at management level (CEO and USER) and one interviewee at operational level (PCO) indicated that TPC has a budget for employees to attend seminars or training outside the company because TPC does not have their own training centre. However, it is apparent that all of the interviewees at operation level (PCO, TM1 and TM2) stated that even though the company has a budget for them to attend any kind of seminar or training they wish, they have no time to do so – they are too busy with their routine jobs. Further, two members of the implementation team insisted that the seminar and training about ABC systems was insufficient for them to do this job. The interviewees, for example said that,

Interviewee (CEO): The company has a huge budget every year for employees to attend seminars and training outside the company because they don't have a training centre here.

Interviewee (USER): No doubt about that; the company has spent a lot of money on our employees to offer seminars and training all the time.

Interviewee (PCO): It is okay in this matter, but the problem was, we had no time to get any further knowledge. Our job is always busy.

Interviewee (TM1): I attended seminars about ABC last year to get more idea about it. In my opinion, it's easy in the seminar room, but it's very complicate to handle it. It takes time and needs more experience to use it professionally.

Interviewee (TM2): It was only one time last year. Just a two day seminar for the accounting system, ABC was one part of it. I could say three hours only for the ABC topic.

6.5.1.2. Resource adequacy, including budgeting, manpower, and computer system (Sub-factor No. 10)

Five interviewees (100.00% of the participants) raised this sub-factor. Interestingly, all of the interviewees accepted that they have faced some kind of difficulty in one way or another. It was about the adequacy of staff particularly the staff in the department of accounting as mentioned by the CEO, and also the USER who stated that TPC is a small company, so if any project requires a large financial investment, it may take time. Moreover, the project coordinator (PCO) mentioned that the ABC team needs more staff (ABC team members) for the ABC implantation project, and also new PCs to support the project as well. However, two of the implementation team do support the project coordinator that the ABC team really needs new PCs to do a better job. The interviewees, for example, said that,

Interviewee (CEO): We need more staff for the department of accounting; it is insufficient at the moment. For example; we have got only two staff in charge of the cost accounting system.

Interviewee (USER): We are a small TSE, so we need to do everything step by step. Some projects may take time if it requires a huge investment.

Interviewee (PCO): Some departments haven't got PCs yet, so they still use manual methods to do their job. In my opinion, it would be great to provide them with more PCs, it would improve the quality of work in the department and we could get reports on time. Moreover, I realise that I need more accountants for my department, and I would like to increase the number of ABC team members as well. It is not sufficient at the moment.

Interviewee (TM1): We have a lot of jobs to do every day, but our staffs are not enough.

Interviewee (TM2): The management team plans to get new computer systems; it is going to be an online system.

6.5.1.3. Strong support from top management (Sub-factor No. 16)

Five interviewees (100.00% of the participants) raised this sub-factor. From the perception of the management, they realise that the company has to offer strong support to the ABC project in every way. However, two interviewees at operational level (PCO and TM1) mentioned that they need more strong support continuously, especially new PCs. Besides this, one of the ABC team (TM2) added that the company should give more support and not think about the budget all the time. The interviewees, for example, said that,

Interviewee (CEO): I am quite sure that the management team will do everything to support our employees to improve their jobs as much as we can, however, it depends on the budget as well. If a project needs a huge budget, it may take a long time.

Interviewee (USER): I do understand that it is very important to support our employees to do their jobs properly. In my opinion, it is not a problem here – just let us know what you want. The company will support you as much as we can. Don't forget, we are a family here.

Interviewee (PCO): They know that we need support continuously; I feel that it is okay.

Interviewee (TM1): They should provide us with more staff and new PCs.

Interviewee (TM2): I feel nothing special about the support from the top management. It seems you can request what you want but it depends on the budget. It is the main thing to consider in this company.

6.5.1.4. Stand-alone computer to support ABC system (Sub-factor No. 19)

Three interviewees (60.00% of the participants) raised this sub-factor. Three interviewees at operational level (PCO, TM1 and TM2) stated that they have got PCs as the stand-alone system to support the ABC project; however the PCs were very old and were of low capacity. They insisted they really need new PCs. The interviewees, for example, said that,

Interviewee (PCO): We have a stand-alone computer system to support the ABC system; by using Excel we set up the activity for each product and how much it is for each activity and it will calculate how much it is for each product and print out this information as a production report.

Interviewee (TM1): We use a stand-alone system to support this job, but it's a bit old, and of low capacity.

Interviewee (TM2): It's a stand-alone system to support ABC implementation. It's time to replace them with new PCs: they're too old.

From the findings above (Section 6.5.1, 6.5.1.1-6.5.1.4), the results show that there are a few main points to be considered.

Firstly, from the implementation team's knowledge about ABC, it is apparent that the team indeed had no regular seminars or training, even seminars about the ABC system. From the interviewing a strong impression emerged that the implementation team accepted that it was not sufficient to support them to do a better job for this project. Hence, that lack of knowledge is an identifiable factor and it should be one of the main factors to be addressed.

Secondly, in terms of resource adequacy, all the interviewees agreed that they have undergone difficulty because of limitations in man-power. They insisted that they need more staff, especially accountants but they have no budget at all to recruit new staff. Therefore, it is possible to surmise that resource adequacy should be one of the main factors that have to be considered.

Thirdly, even though the team has got PCs and a stand-alone system to support this project, while this seemed to be perfect, most of the interviewees realised that the capacity of the PCs was not good; that obviously they are too old and of too low a capacity. Hence, it is possible to indicate that lack of management support in the case of the efficiency of equipment may be deemed one of the main factors that also must be considered.

Apart from the above discussion, not surprisingly, it is possible to conclude that the top management support was not that of full support, because most of interviewees insisted that there were some limitations. In particular, the number of accountants, lack of knowledge about ABC, and the capacity of the PCs are the main important factors which have to be considered at this company.

6.5.2. Main Factor 2: Computer Systems

One sub-factor is identified in this area. As mentioned earlier in main factor number 1, it was found that the top management support was limited in terms of the capacity of the PCs. However, there is one sub-factor to be discussed. It is about the computer systems also; it is to support this main factor as follows:

6.5.2.1 Computer systems (Sub-factor No. 9)

Five interviewees (100.00% of the participants) raised this sub-factor. It is apparent that this company did not buy any special software to support the ABC implementation at first. The company still uses the software program Microsoft Office Excel, however, the team mentioned that the PCs are very old and do not work properly. However, from the interviews with staff at management level, they confirmed that the company is in the process upgrading its equipment with new PCs and also implementing an online computer system in the near future in order to support the whole management system. The interviewees, for example, said that,

Interviewee (CEO): The company didn't use any special software computer at all, we have used only Excel for the cost accounting system. However, we are on the route to building up a new computer system as an online system within each department and the two factories.

Interviewee (USER): We are now in the process of upgrading our computer systems as a whole in order to support our management system in the near future.

Interviewee (PCO): We use the Excel program to support the ABC system here. It is not complicated to run this program because we set up everything in spreadsheets. It provides us with production reports.

Interviewee (TM1): I think that our team needs new PCs to support an ABC system. The PCs are too old now. They really need to be changed or upgraded.

Interviewee (TM2): I had to learn how to use the Excel program to support an ABC job. It is not complicated to do this job, but it involves a huge number of documents.

From the finding above (Section 6.5.2, 6.5.2.1), it is apparent that the computer systems were very old and also of low capacity. Microsoft Excel has been used to support ABC implementation and operated as a stand-alone system, and is considered quite simple to operate. Moreover, new computer systems are going to set up as an overall online system in

the near future. In conclusion at this point, the computer systems may be a significant factor posing a threat to the ABC implementation in this company. In contrast, this difficulty is expected to be overcome by using the new computer system.

6.5.3. Main Factor 3: Education and Training

One sub-factor is identified to support this topic. It is about providing training adequately and continuously (Sub-factor No. 8), as identified by five interviewees (100.00%), including two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2). Clearly, it has already been discussed in Section 6.1.1 and the results showed that the implementation team had very good educational backgrounds in accounting. However, the ABC team did not receive training or attend seminars regularly. In other words, the implementation team's knowledge about ABC is insufficient for them to do their jobs properly. It is thus possible to conclude at this point that lack of knowledge about ABC has occurred, therefore, it might be one of the main factors to be addressed.

6.5.4. Main Factor 4: ABC team

One sub-factor was identified to support this topic. It is sub-factor number 26 "Selection of ABC team members". It is significant to note that the team at TPC has been selected from the department of accounting. This was only three staff, including one project coordinator and two team members. The team has very good background education and working experience

in accounting, and also they have been working in the department of accounting for many years (see Table 6.1 and 6.2). However, three interviewees (60.00% of the participants) raised this sub-factor. All of them are interviewees at operation level (PCO, TM1 and TM2). The interviewees, for example said,

Interviewee (PCO): There are three people who make up the implementation team; all of them are from the department of accounting. I can say our team has been working together very closely and helping each other to get the job done.

Interviewee (TM1): My boss told me that I have to join the ABC team because I have been working in cost accounting for many years, that my experience could help the team to fulfil the project.

Interviewee (TM2): My first job is to be responsible for the cost accounting. So, my boss told me that I am qualified to be one of the ABC team. That's it, nothing else. That's why I became one of the team.

By contrast, Cooper (1990) stated that several important criteria were identified for selecting team members, such as being intelligent and flexible in their approach to problem solving. In addition, he noted that knowledge of accounting was not considered criteria for selection although it was felt that at least one member of the team had to understand the firm's existing accounting systems. Besides this, it is recommended that to achieve the objectives of an ABC project, the implementation team should include members from several disciplines other than accounting or finance (Cooper 1990). It has also been suggested that the team should comprise representatives from various departments in the organisation. Members from across the organisation ensure a broader acceptance due to better communication, transfer of the knowledge, and awareness of the benefits (O'Guin 1991).

From the discussion above it seems that this company did not understand or were not aware of those criteria that have been addressed in prior ABC research (e.g. Cooper, 1990; O'Guin, 1991; Grieco, 1995). Furthermore, it can be stated that the team is not a multidisciplinary team. Hence, it is possible to note that this may be one of the main factors that the company has to be concerned about.

In conclusion at this point, from the findings and discussions of Section 6.5.1-6.5.4 the following conclusions may be made:

- ✓ The top management support was not full support because some insisted that there were some difficulties encountered (as discussed in Section 6.5.1).
- ✓ The capacity of the PCs was not good enough and they were too old. However, a new computer system is going to be set up as an online system; this problem is expected to be resolved in the near future (as discussed in Section 6.5.2).
- ✓ The implementation team at TPC has not received training or attended seminars regularly; training was not sufficient for the implementation team (as discussed in Section 6.5.3).
- ✓ The implementation team was selected from members of staff who worked in the department of accounting – this was the main criteria for selecting team members at

TPC. It is not a multidisciplinary team that is required to conduct the ABC project in most cases (as discussed in Section 6.5.4).

6.5.5. Main Factor 5: Objectives of ABC

It is apparent that seven sub-factors have been identified as the objectives of ABC implementation at TPC, such as being used to support decision making on pricing policy; to increase effectiveness in the company; aid cost allocation in the manufacturing; cost reduction; control systems; planning systems; and stock valuation. Cooper and Kaplan (1988) stated that the ABC system is not designed to trigger automatic decisions. Rather, it is designed to provide more accurate information about production and support activities and product costs so that management can focus attention on the products and processes with the most leverage in order to increase profits and also help managers make better decisions about product design, pricing, marketing, and mix, encouraging continual operational improvement. The interviewees made various statements about these factors as follows:

6.5.5.1 Decision-making on pricing policy (Sub-factor No. 1)

Five interviewees (100.00% of the participants) raised this sub-factor. Two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2) mentioned that the company decided to implement an ABC system for the purpose of aiding decision-making. O'Guin (1991) notes that the ABC system is important for cost

estimating. The products are one of a kind; therefore, profits depend on how well the company estimates costs. Apart from this, it is possible to state that the ABC implementation at TPC has been used to determine the pricing of each product. The interviewees, for example, said that,

Interviewee (CEO): It is to determine the price of each product.

Interviewee (USER): We need to know exactly how much it is for each product to set up the pricing.

Interviewee (PCO): Indeed, it is to find out the cost of each product and for determining the price of each product as well.

Interviewee (TM1): It's important to find out how much it is for each product in order to use this information for the pricing policy.

Interviewee (TM2): I knew that our management team wanted to utilize this information for the pricing policy.

6.5.5.2 Increased effectiveness in the company (Sub-factor No. 4)

Five interviewees (100.00% of the participants) raised this sub-factor. Two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2) had the same idea about this factor. It seems that ABC information woke them up concerning cost information in their department. Indeed, they realised that competitiveness was critical, particularly in the manufacturing section. Roztocki, Valenzuela, Porter, Monk, and Needy (2001) cited that manufacturing firms face ever-increasing competition in today's global marketplace. The company must react quickly and manufacture high quality, low cost products to be successful in the new environment (Roztocki 2001). Hence, it is essential for the company to reduce unnecessary costs and take other such measures. Apart from this, it is affirmative to believe that the ABC system could help their company to develop and improve

in efficiency, in order to prepare for high levels of competition after Thailand joins the WTO in the near future. The interviewees, for example, said that,

Interviewee (CEO): The company suffers some problems as a result of the operational procedures because some products are made at a loss, some products make a profit; so we would like to know which ones make a loss or a profit. We are trying to improve cost information and financial reports. Because of the WTO, our company has to prepare for the competition in this industry; China is going to be our competitor after this, because their products are always cheaper than our products, however, we will try to keep our market share by improving quality and reducing unnecessary costs at the same time. We are safe at the moment, but not for long. After Thailand joins the WTO, we have to make sure that our company is ready in every way, so, the ABC system may help us to improve our costing system.

Interviewee (USER): We have been the leader in this industry for a long time because it is very difficult to compete in this business, it requires a high level of experience indeed, we can say that there are not many experts in this line of business. We could say that we have 90% market share now. In my opinion, we need a good system to help us to improve and develop our management system; ABC should be a good solution at this time.

Interviewee (PCO): It could be said that the information from the ABC system could help us unmistakably identify the costs of each product. Also it's been used to support the responsibility accounting policy, as in identifying each manufacturing department as business units. It could provide us with a clear picture about the performance of each manufacturing department.

Interviewee (TM1): I agree that the ABC system is very useful for our company. The main thing I found, every department tries very hard to find and cut unnecessary costs in their department. I feel that it is a serious topic in every department to talk about costing at the moment.

Interviewee (TM2): It looks like an ABC system pushes every department in this company to be concerned about costing.

6.5.5.3 Cost allocation in the manufacturing (Sub-factor No. 6)

Two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2) raised this sub-factor. One hundred percent of the participants mentioned that the company is in the manufacturing business, and consequently

that it is very important to deal with the huge manufacturing overhead costs. If they could understand the causes and effects of the whole overhead, especially if the ABC system was fully implemented, it would make a great contribution to TPC in identifying and assigning them to the correct direction. Innes and Mitchell (1991) cited that an ABC system really helps to classify what is going on in important areas. It is a useful tool for getting a handle on overheads (Innes 1991). Moreover, an ABC allocation system will greatly enhance the ability of the manager to produce product cost reports that are more realistic, appropriate and flexible in order to meet the expanding needs of operation reporting (Grieco 1995). Therefore, it would offer a high-quality approach to getting more accurate estimates of the cost of each product. Apparently though, from the interviewing, it seems that the employees and management are not aware of this matter. Several interviewees, for example, said that,

Interviewee (CEO): The company applied the responsibility accounting concept, as a business unit, so each manufacturer is really concerned about their income and cost, particularly, how to allocate overhead costs to their department and manufacturing, because our production processes are quite complex.

Interviewee (USER): In my opinion, we don't have any problem with allocating cost in manufacturing because it will be allocated to each product directly step by step in the production processes.

Interviewee (PCO): Because we are a manufacturing business, we have got huge manufacturing overheads, it is very important to manage them in the right way to make sure that each manufacturing department is allocated resources in the right way.

Interviewee (TM1): TPC has two manufacturers and a head office, we have to be careful about how to allocate overhead cost in each factory. We have to make sure that it goes in the right direction. In my view, ABC information is very useful to support this job to get accurate details of the cost of each product.

Interviewee (TM2): We need ABC information to support the technique to allocate overhead cost into the production process, in order to get the cost of each product appropriately.

6.5.5.4 Cost reduction (Sub-factor No. 7)

One hundred percent of the participants raised this sub-factor, including three interviewees at management level (CEO, DOA and USER) and two interviewees at operational level (PCO and TM2). They had similar ideas and stated that they needed to understand the causes and effects of costs in the company by using the ABC information. Indeed, the best ABC system in the world would be useless if no one understood how to use the information it provides (IMA 1993); hence, using the ABC information is very useful for the company. Therefore, the company needs to identify all unnecessary costs by using ABC information in every single department in order to eliminate them as far as they can. It may be a significant way to approach the accurate costing of each product and also improve efficiency in each department by getting rid of unnecessary costs. The interviewees, for example, said that,

Interviewee (CEO): We want to know the cost of each product, the cost of each department, and want to investigate more details in order to reduce unnecessary costs.

Interviewee (USER): We always pay attention to the cost of each product in order to find out how to reduce or cut it as much as we can.

Interviewee (PCO): One of my main jobs is to find out any unnecessary costs that occur in every single department and try to reduce them.

Interviewee (TM1): I understand that ABC information could help the company to keep a close eye on product costing, so it's a chance to cut or reduce unnecessary costs.

Interviewee (TM2): Cost reduction is one of the topics that everyone has to be concerned with, especially the factory manager.

6.5.5.5 Controlling systems (Sub-factor No. 5)

Four interviewees (80.00% of the participants), two of them at management level (CEO and USER) and two of them at operational level (PCO and TM1) raised this sub-factor.

Interestingly, it is possible to state that they do realise that competitiveness is significant that consequently improving the company's efficiency is the first priority that the company has to be concerned with. Indeed, O'Guin (1991) stated that the ABC system was developed to understand and control indirect cost. It tells the management team what triggers cost and how to manage it. It is the first true cost management system (O'Guin 1991). Not surprisingly, TPC itself decided to implement a new system such an ABC system in order to utilise the ABC information as the control system for improving efficiency in their company. Besides this, they believe that it is time to think and prepare their company for the highly competitive environment of the near future. The interviewees, for example, said that,

Interviewee (CEO): The price of the main materials and direct labour has been increased continuously. We need to import the direct materials and focus on the stock controlling system.

Interviewee (USER): I am quite sure that the company should focus on all cost information in order to use that information for the control systems in the company.

Interviewee (PCO): We have to control the overhead cost incurred in each factory and allocate it to each product carefully, in order to make sure that each product gets the right product costing.

Interviewee (TM1): I have been told that the ABC project is very important because our business is manufacturing so the ABC system could help our business in its control system. The ABC team must concentrate on this project to get the best output.

6.5.5.6 Planning systems (Sub-factor No. 12)

Again, four interviewees as mentioned in Section 6.5.5 raised this sub-factor. They revealed that the utilising of ABC information could help the company in planning strategy as well as in cost control. Even though the company has a very good planning strategy, it does not mean the company is going to achieve the company's goals. The company needs to be careful

about all the information in planning, as Cooper and Kaplan (1988) stated that bad information on product costs leads to bad planning and competitive strategy (Cooper 1988). Moreover, it has been confirmed by O'Guin that ABC is a system for planning (O'Guin 1991). Therefore, it is possible to note that the ABC implementation at TPC could provide accurate information for the planning strategy as one of the tangible benefits from this system. The interviewees, for example, said that,

Interviewee (CEO): The board of directors requests us to complete a Financial Statement in advance for planning purposes so we need to be concerned about all the company's accounting information, particularly, sales, cost of product, cost of good sold, and expenses, in order to make sure that they are accurate for this purpose. So our accountants have to work very hard.

Interviewee (USER): Even though we are a small TSE, we still need to prepare a very good plan for our business, and I think the ABC information helps us a lot for planning.

Interviewee (PCO): Our company prepares a strategic plan, including budgeting plan, production plan, marketing plan, and advanced financial report. These have been prepared every three months in advance. So, we need to follow all of those plans.

Interviewee (TM1): I knew that the management team requested to use ABC information for the planning strategy here.

6.5.5.7 Stock valuation (Sub-factor No. 33)

This sub-factor has been raised in particular by the implementation team (PCO, TM1 and TM2). However, the best ABC system in the world will be useless if no one understands how to use and apply its information (IMA 1993), thus, use of ABC information outputs for the valuation of stock is one of the benefits that the company can use (Innes 1996). They insisted that one of the purposes in implementing an ABC system is to calculate stock value. The interviewees, for example, said that,

Interviewee (PCO): It's very useful for the stock valuation. So, it should be used to demonstrate the reliability of the production reports, and so on.

Interviewee (TM1): The ABC system helps us to get the correct stock value.

Interviewee (TM2): It's for stock valuation; it's one of the main ideas behind implementing an ABC system here.

In conclusion at this point, therefore, from the above findings and discussion (Section 6.5.5, 6.5.5.1-6.5.5.7), the original objectives of the ABC project at TPC are to:

- ✓ Aid decision-making on pricing policy
- ✓ Increase effectiveness in the company
- ✓ Cost allocation in the manufacturing
- ✓ Cost reduction
- ✓ Controlling systems
- ✓ Planning system
- ✓ Stock valuation

6.5.6. Main Factor 6: ABC Implementation Process

There were five sub-factors to support this area. The TPC staff interviewed perceived that those sub-factors were involved in the implementation of ABC at TPC. Consequently, they will be presented as a whole process (step by step) from the beginning until the end of the implementation process. The interviewees had varying perceptions about those factors as follows:

6.5.6.1 External Consultant (Sub-factor No. 3)

All the interviewees (100.00% of the participants) raised this sub-factor, including two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2). From the interviewing it was found that that TPC hired a consultant from a well-known Thai university (Thamasart University) to study the possibility of an ABC project. The consultation took just three months and the consultant reported to the board of directors that it was possible to implement an ABC system within the company and also that the consultant could provide the materials and procedures for the implementation step by step, such as how to get started, how to select the implementation team, what kind of computer systems to use to support an ABC implementation, and so on. However, interestingly, the significant point was that the consultant was not involved in a practical sense at all. Only internal staff from the department of accounting were involved with the implementation at this company. They had to run this project using the materials and procedures supplied by the consultant. The interviewees, for example said,

Interviewee (CEO): The company hired a consulting team led by a professor from a well-known Thai university to study this project.

Interviewee (USER): Our company developed the cost accounting system continuously. We hired the team from Thamasart University to do it. I was involved in this project long time ago since I worked for the department of finance and accounting here.

Interviewee (PCO): The professor from Thamasart University helped us to do this project. It was a short contract.

Interviewee (TM1): It's a team from Thamasart University.

Interviewee (TM2): The consulting team from Thamasart University supported this project.

6.5.6.2 Data collection by using standard forms (Sub-factor No. 18)

Three interviewees (60.00% of the participants) raised this sub-factor. Most of them are interviewees at operational level (PCO, TM1 and TM2) – in other words they are the implementation team. As mentioned in Section 6.5.6.1, the implementation team applied the standard forms which they received from the consultant with which to collect data. Interestingly, from the interviewing, the project coordinator mentioned that the implementation team had to learn every single aspect of the ABC system by themselves. It appeared that everything was in those materials. It was the first step they took. However, the team started this project by collecting data from every department in the company; no pilot project was performed. The result from this process was a great deal of documents (Standard Forms). The team had to classify all of those documents using Excel. The interviewees, for example said,

Interviewee (PCO): We used the standard forms to collect data about the ABC information. We collected from every single department in the company; we could say we collected data 100%, we didn't establish a pilot project here.

Interviewee (TM1): I have to say, it was a big job to do indeed. I had to collect a lot of data from every single department in two factories. You have no idea how many documents were on my desk. It's a nightmare to do this job.

Interviewee (TM2): My main job is to do data collection by using standard forms. I keep doing this in every department, particularly, in the two factories. It's a big job for me because the team needs many details from each production process step by step.

6.5.6.3 Reliable data (Sub-factor No. 25)

Three interviewees (60.00% of the participants), namely the implementation team, raised this sub-factor. Of course, the team had to concentrate on those data collected. It was not easy to classify the huge amount of data collected; indeed the team had to work very hard to manage them. Finally, the team spent a lot of time checking the accuracy of this data, for example, by comparing the same job done in different departments. Moreover, it was necessary to recheck with other resources such as job descriptions and so on. The team had to make sure that this data were accurate and good enough for the next step of the project, as acknowledged by Cooper (1990) that the premise for using a new ABC system should be that it is better to be approximately right than exactly wrong (Cooper 1990). The interviewees, for example said,

Interviewee (PCO): Honestly, I felt that some information from the data collection was not accurate, as I tried to recheck from time to time, I found that some of it was correct, so I needed to sort it very often.

Interviewee (TM1): The team agreed to concentrate on all the information from the data collection process as much as we could in order to make sure that we got reliable information. If not, it might be a big problem when we get the final results of this project.

Interviewee (TM2): I think that our production processes are too complicated so some data is inaccurate. I had to recheck again and again. It's taken a lot of time to do.

6.5.6.4 Activities and cost drivers determined (Sub-factor No. 23)

It was the implementation team, 100.00% of the participants (PCO, TM1 and TM2) who raised this sub-factor. The interviewees, for example said,

Interviewee (PCO): We tried to classify the information from the data collection in order to scope the main activity for each product and select the cost driver as suited to the activity. For example, material procurement activity, we selected the number of orders as the cost driver; inventory reporting activity, we selected the number of reports as the cost driver, etc. We recorded 800 activities in the first place, we tried to reduce those activities as much as we could, so it's been reduced to 400 activities now. However, in terms of the cost drivers, I had to say that it was more complicated than we thought indeed. There were 300-400 cost drivers identified.

Interviewee (TM1): It's not easy to determine main activities, however, the Excel program helped us a lot to sort out this problem and it'll show you how much it is for each activity.

Interviewee (TM2): I am still confused about this process, because it involved a lot of data that needed to be classified. Even though the team uses Excel, it is still mixed up sometimes.

Obviously, the findings showed that the information from the data collection process was stored on a stand-alone computer based system, in order to identify the activities. The team found that a large number of activities have been classified, approximately 800 activities at first; these have been reduced down to 400 activities at the moment. In addition, the team identified approximately 300-400 cost drivers at the same time.

6.5.6.5 Keeping ABC information up-to-date (Sub-factor No. 24)

Again, it was the implementation team, 100.00% of the participants (PCO, TM1 and TM2) who raised this sub-factor. The interviewees, for example said,

Interviewee (PCO): I am pleased to tell you that we always keep our information up-to-date continuously for the ABC system because we need to make sure that the cost of produce is accurate and reliable.

Interviewee (TM1): I feel that this project has never been finished. It seems you have to update the information all the time. I would like to transfer to another department if it's possible.

Interviewee (TM2): It's a long project indeed. The team has to collect new data to keep it up-to-date very often.

Without doubt it has been found that the team needs to keep collecting data for the purpose of rechecking the accuracy of data. As mentioned in Section 6.5.6.4, it is vitally necessary to update the information from time to time, particularly information from the production department, in order to make sure that the team has sufficient information to improve the efficiency of the ABC information.

In conclusion at this point, the findings and discussions from Section 6.5.6, 6.5.6.1-6.5.6.5 indicates it can be concluded that:

- ✓ TPC hired a well-known university (Thammasart University) to study the possibility of an ABC project. The results of the study indicated that it was possible to implement an ABC system at TPC and that TPC could do it themselves – it was not necessary to hire a consulting company or invest in special computer software.
- ✓ The main idea of this project was to determine the appropriate activities and cost drivers suitable for TPC.
- ✓ The implementation team did data collection using standard forms as the instruments. The reliability of the data was one of the topics that the team was concerned about. Therefore, the team used the triangulation method to verify the validity of the data,

such as by comparing the data from two departments doing the same job, or collecting data from time to time and comparing them later, or checking other resources such as job descriptions.

- ✓ The activities and selection of the cost drivers was identified using a stand-alone computer system to support the ABC system. It included approximately 800 activities which have been reduced down to 400 activities. In terms of the cost drivers, the project coordinator stated that approximately 300-400 cost drivers were identified.
- ✓ The implementation team needs to update the data from time to time to get ensure accurate information that will help to improve the efficiency of the ABC information.

6.5.7. Main Factor 7: Benefits of ABC Implementation

Nine sub-factors were identified as the benefits of ABC implementation at TPC. However, five interviewees (100.00% of the participants), including two interviewees at management level (CEO and USER) and three interviewees at operational level (PCO, TM1 and TM2) raised six sub-factors, including (1) SF01: Decision-making on the pricing policy, (2) SF02: the ABC system could give a clearer picture of the product costing, (3) SF04: Increased effectiveness in the organisation, (4) SF06: Cost allocation in the manufacturing, (5) SF07: Cost reduction, and (6) SF11: ABC implementation led to some other developments in internal accounting systems.

In addition, it is important to note that four interviewees (80.00% of the participants) including two interviewees at management level (CEO and USER), and two interviewees at operational level (PCO and TM1) raised two more sub-factors: (7) SF05: Control systems, and (8) SF12: Planning systems. Moreover, only three interviewees at operational level (60.00% of the participants) raised one last sub-factor, namely (9) SF30: Utility benefits of ABC output.

Obviously, the findings show that some benefits have been found since the company implemented the ABC system. This is in keeping with what Innes and Mitchell (1996) reported, that ABC systems have received support because it is perceived that they have a beneficial behavioural effect on decision-makers, and that more accurate information will change decisions to the benefit of the firm (Innes 1996). At least nine beneficial outcomes may be identified after ABC implementation at TPC.

Six sub-factors have been discussed already in Section 5 as the main factors concerning the objectives of ABC implementation at TPC (5.1 Decision-making on the pricing policy, 5.2 Increased effectiveness in the organisation, 5.3 Cost allocation in the manufacturing, 5.4 Cost reduction, 5.5 Control systems, and 5.6 Planning systems). Those sub-factors were presented as the main objectives of ABC implementation; in other words, these were also the benefits

of the ABC implementation. Hereby, there are three more sub-factors to be discussed as follows:

6.5.7.1. ABC system could give clearer picture of the product costing (Sub-factor No. 2)

Due to extreme market competition, TPC's competitive strategy was based on the pricing policy and this strategy had produced a strong internal focus on the product cost information that had become a significant point for the operations management. Hence, TPC required that the cost information could provide an accurate picture of cost and a clear indication of how the product had incurred costs in each department in the factories. From this, it can be stated that an ABC system had been selected as a tool to help the company to get more accurate product costing, in order to utilize this information for the pricing policy as one of the main objectives of ABC implementation at TPC. The interviewees, for example said,

Interviewee (CEO): We make a number of products so the company tried to classify the cost of each product.

Interviewee (USER): The cost accounting system has been improved continuously to give a clearer idea about the cost of products.

Interviewee (PCO): We have four main products from the manufacturing. ABC helps us to get clearer information about the product costing.

Interviewee (TM1): I am positive that we can have a clear picture of the cost of each product now.

Interviewee (TM2): I realise that the ABC system is the final answer to getting an accurate estimate of the cost of each product at the moment. I accept that it has been improved a lot since our company implemented this system.

6.5.7.2. ABC implementation led to some other developments in internal accounting systems (Sub-factor No. 11)

As mentioned in Section 6.5.7.1, it is possible to say that the use of ABC information could be a significant channel leading into the internal accounting systems, particularly the product cost information, leading to improvements in each department of TPC. The interviewees, for example said,

Interviewee (CEO): The company evaluated the accounting systems last year. The results showed that there were some develops in the cost accounting system. It was considered trustworthy and efficient. It can provide better information about costing that lead to developments in pricing and the preparation of income statements every month.

Interviewee (USER): I used to work in the department of accounting as the director, I know that it's useful to use the ABC information in my department now; at least I have to notify my staff to be careful about costing in our department.

Interviewee (PCO): I think that the highlights of the ABC system are: the manufacturing manager always considers their costs; information from the ABC system can give us a clear picture about the cost of products in each factory.

Interviewee (TM1): I couldn't see anything like that, but I found that the manager and head of department is now concerned about any cost that occurs in their departments.

Interviewee (TM2): It's a lot better now because the manager or head of department has to take more responsibility for costs in their factory or department.

6.5.7.3. Utility benefits of ABC output (Sub-factor No. 30)

Interestingly, one of the findings showed that the Office of the Auditor General of Thailand reported to the Board of Directors of TPC that the financial reports are effective, particularly, the production reports. This is understandable if compared to other Thai State Enterprises. Thus, it is important to note that this is an unexpected benefit that TPC has got from the output of ABC implementation. The interviewees, for example said,

Interviewee (PCO): It is quite clear that we can have accurate information about the costs of each product; this is the main benefit we can get now. However, we have to update our information about the production process all the time to make sure that all the information is accurate.

Interviewee (TM1): The officer from the Office of the Auditor General of Thailand told our Board of Directors that our financial reports are among the best, particularly, the production reports, which are clear, quick, and efficient.

Interviewee (TM2): I can say this system gives us accurate information about product costing.

At this point, as the findings and discussion above in Section 6.5.7 (6.5.7.1, 6.5.7.2, and 6.5.7.3,) and also, Section 6.5.5 (6.5.5.1, 6.5.5.2, 6.5.5.3, 6.5.5.4, 6.5.5.5, and 6.5.5.6) show nine sub-factors were identified and support this main factor. The main results indicate that after ABC implementation at TPC, the benefits are:

- ✓ Improved decision-making on pricing policy
- ✓ ABC system could give a clearer picture of the product costing
- ✓ Increased effectiveness in the company
- ✓ Cost allocation in the manufacturing
- ✓ Cost reduction
- ✓ ABC implementation led to other developments in internal accounting systems
- ✓ Control systems
- ✓ Planning systems
- ✓ Utility benefits of ABC output

6.5.8. Main Factor 8: Problems of ABC Implementation

Interestingly, it has prompted research to extensively explore the problem factors that are influencing or associated with the ABC implementation at TPC. The findings show that twelve sub-factors were recognised as the problems of ABC implementation at TPC. These problems were raised by the interviewees who were involved with the ABC implementation. Again, it is important to state that the researcher asked the interviewees “what problems do you foresee with ABC” and did not attempt to influence the interviewees. This meant that the findings in this topic were arrived at through the researcher having used his own judgment in classifying the interviewees’ answers into various categories based on the numbers of the interviewees from most to least as follows:

Table 6.5 ABC problems experienced as perceived by five interviewees

	Number of Interviewees
1. SF15: Privatisation	5
2. SF18: Organisation culture	5
3. SF13: Lack of staff motivation	4
4. SF20: Choice of activities and difficulty of identifying activities	3
5. SF21: Poor quality of information	3
6. SF22: Too much data collection	3
7. SF25: Reliable data	3
8. SF27: Inadequate size of ABC team	3
9. SF28: Lack of production information	3

10. SF29: Lack of knowledge and training about ABC	3
11. SF31: Difficulty of identifying cost drivers	3
12. SF32: Increased workload	3

From this the researcher identifies these problems at three levels as follows:

- **High Significance Level (HSL):** this means that if a number of the participants, between 4-5, perceive this problem then it must be of serious concern and demands in-depth investigation.
- **Moderate Significance Level (MSL):** this means that if a number of the participants, between 2-3, perceive this problem then it is a concern and requires investigation.
- **Low Significance Level (LSL):** this means that if only one participant perceives this problem then it has no significant correlation with the ABC implementation process.

High Significance Level (HSL): Table 6.5 showed that there were three sub-factors, acknowledged as HSL problems, including (1) privatisation, (2) organisation culture, and (3) Lack of staff motivation.

Five interviewees (CEO, USER, PCO, TM1 and TM2) expressed that as the government policy was to privatise all Thai State Enterprise (TSEs), therefore TPC is on the way to privatisation also. One interviewee mentioned that “we have to set up our systems to support

the changes in the company, however, we are strong enough to do so”. Moreover, another interviewee argued that “even though it is going to privatise, the company needs to change the management style from a public company style to a private company style”. Apparently, the company seems to be performing satisfactorily now. However, it is possible that after privatisation the organisation structure may be changed; hence, this may lead to changes in some activities and some cost drivers as well. Therefore, it is important to note, this might be a problem or that there may be an impact of privatisation after all.

In addition, five interviewees (CEO, USER, PCO, TM1 and TM2) noted that TPC is a small organisation if compared with other TSEs, with just 900 employees; hence the employees feel that they work for the family – that the company has a special culture. One interviewee added that “we have very good communication between the management team and our staff, so if we would like to implement some new systems, for example, an ABC system, we had no problem about staff resistance at all”. However, even though the staff did not resist the new system, it did not mean the staff would offer strong support to the new system either.

Indeed, TPC should rethink the word “family business”, it may be excellent for the public image of the company, there being no problems with miscommunication between top level and lower levels, as they mentioned, but on the other hand, it may be a significant problem as the next finding showed that the “lack of staff motivation” issue was evident in this company.

It meant that the word “family business” meant nothing at all. However, four interviewees (CEO, USER, PCO and TM1) stressed that “they worked for nothing because the company could not get any profit, so we cannot get a bonus”.

It is possible to declare that organisation culture in terms of the word “family business” at this company has not been demonstrated since TPC staffs have not motivation to work hard or improve their performance to increase effectiveness in the company. Their working style is said to be like working for their family; however this raises the question of how the management can expect to get the best results under the new system, particularly, an ABC system that needs strong continuous support not only from the top management but also everyone else in the company.

Moderate Significance Level (MSL): Table 6.5 showed that there were nine problems at this level, as perceived by the interviewees, including (1) choice of activities and difficulty of identifying activities, (2) poor quality of information, (3) too much data collection, (4) reliable data, (5) inadequate size of ABC team, (6) lack of production information, (7) lack of knowledge and training about ABC, (8) difficulty of identifying cost drivers, and (9) increased workload. However, it is important to note that all of the problems above were revealed by the implementation team (PCO, TM1 and TM2).

In fact, “choice of activities and difficulty of identifying activities” is one of the problems from the implementation procedure at TPC. The implementation team mentioned that “it is very difficult to classify or set up the activities because we have got a lot of information from the data collection”. Besides this, some of the team stressed that “it’s too complicated to do this job and it demands more experience”. Not surprisingly, this problem as mentioned earlier may be related to other problems such as “difficulty of identifying cost drivers” as well. Those problems may come from similar reasons related to the knowledge and experience of the ABC team.

Furthermore, the “poor quality of information” has been identified as one of the problems also. Clearly, the team stated that “the standard form needed too many details and the team found that some information was inaccurate”. Moreover, the team also stated that “the ABC system involved a huge amount of data, it took time to classify, grouping and so on, and it took time to complete this job”. Another factor, “too much data collection”, could be identified as another of the problems perceived at TPC.

In addition, in terms of reliable data, TPC used standard forms as an instrument for data collecting since seriously incorrect answers can lead to improper system design, such as in determining the activities and cost drivers. It is necessary to make sure that all information collected is accurate and sufficient for analysing, in order to determine the activities and cost

drivers in the next step of the implementation process. Interestingly, the team stated that “some information was inaccurate; the team needed to recheck it again and again”. For example, the team found that some information from the production process was insufficient and inadequate as one member mentioned that “I knew that the production process was too complicated, I felt that the information from the data collection process was enough, and also I had to recheck to make sure the information was correct”. Apart from this, it meant that lack of production information has been found as another problem in the implementation process.

In the case of the “size of ABC team”, the team mentioned that they worked full-time on the ABC project. Considering this, Cooper (1990) suggested that there should be four people making up the team (Cooper 1990). Meanwhile, Innes and Mitchell (1991) stated that it requires three accountants (part-time) with systems support (Innes 1991). O’Guin (1991) suggested that it will be three to five people (O’Guin 1991) while Grieco and Pilachowski (1995) indicated that six to eight people should serve on the team (Grieco 1995). Bruesewitz and Talbott (1997) mentioned that the team in complex organisations should be six people (full-time) for an ABC project (Bruesewitz 1997). In the case of TPC, it can be said that there is not a problem about “lack of staff time.” In contrast, they mentioned that the team has only three or four people in charge on this project, which is not sufficient in their opinion. Hence, the findings found that the size of the ABC team is still one of the problems at TPC.

In addition, “lack of knowledge and training about ABC” has been identified as one of the problems at TPC. Obviously, the team stressed that “the company should provide more knowledge and training about ABC for the implementation team, because it was not enough, and the manufacturing’s staff should receive training as well”. It is possible to say that the team may understand the ABC system and the output of the system, and how it can best be put to use in improving the company’s operations, but it seemed that a lot of staff, particularly those in manufacturing, did not understand the system. Therefore, if they did not understand, or understood only to a limited extent, it is questionable how they could provide accurate information for the implementation team. Moreover, the team stressed that “it seems to be increased workload for them.” In this case, it could be categorized that a problem that occurred at TPC was “increased workload”.

At this point, as in the findings and discussion above in Section 6.5.8 and as shown in Table 6.5, there were twelve sub-factors identified as the problems in the ABC implementation. Clearly, three sub-factors have been classified as high significance level (HSL) problem, as discussed above. It is important to note that those problems must be seriously considered and given in-depth investigation in order to understand why the ABC system has not provided as good output as expected. Nevertheless, there were nine moderate significance (MSL) problems perceived by the implementation team. It is important to say that those problems have to be considered and investigated because it may be that the system did not achieve the

objectives partly because of those factors. However, it is important to note that no problems have been categorised as low significance level (LSL) problems at all. Finally, it is possible to state that the quality of the ABC information was still questionable because of matters relating to the quality of the information from the data collection process and reliability of the data. Therefore, it is important to note that the output of the ABC implementation could not represent the cost of products accurately at this time.

6.5.9. Main Factor 9: Level of progress of ABC implementation

Using the Krumwiede Model (1997), adapted from the IT stage model, based on organisational change to the implementation of ABC, there were six stages in the ABC implementation process, including (1) initiation, (2) adoption, (3) adaptation, (4) acceptance, (5) routinisation, and (6) infusion (Krumwiede 1997). Apart from this, the interviewees were asked about the level progress of ABC implementation based on the Krumwiede Model (1997). Surprisingly, the researcher found that the interviewees had no idea about this model at all. Therefore, the researcher spent approximately half an hour to explain this model by using a table the same as that shown in Table 6.6. Apparently, it was a good idea to do so because following this, the five interviewees (CEO, USER, PCO, TM1 and TM2) had more confidence in answering this question as shown in Table 6.6. Apparently, from the point of view of the interviewees at management level, the CEO indicated that it is up to 75% and USER mentioned that “I am not sure what answer to give you but I know that it has made

very good progress.” On the other hand, there is a variation of between 50-80% in the perception of the team (operational level), for example, the PCO stated that “I am happy with that, it is up to 80%”; however, two of the implementation teams stated that “it is only half way, or only 50%”. Finally, the results of this question are shown in Table 6.6.

Table 6.6 Level of progress of the ABC implementation at TPC

Stage of the Implementation	Percentage of the progression at each stage (Total = 100%)	Evaluate by the participants (Total = 100%)				
		CEO	USER	PCO	TM1	TM2
Stage 1: Initiation	16.66%					
Stage 2: Adoption	33.32%					
Stage 3: Adaptation	50.00%		Cannot		50.00%	50.00%
Stage 4: Acceptance	66.64%		tell			
Stage 5: Routinisation	83.30%					
Stage 6: Infusion	100.00%					

Note: This table has been adapted by the researcher based on the Krumwiede Model (1997).

At this point, as shown in Table 6.6, it is possible to classify the stage of ABC implementation at TPC as at the “acceptance” stage as mentioned by the CEO and PCO. After interviewing, the researcher also had a clear sense that it is at the “acceptance” stage as well. A possible explanation is that TPC is committed to utilising the ABC information in each department in its manufacturing at the moment.

6.6. Summary

The results of this case study have clear implications for ABC implementation at TPC. It contributes to their company, the implementation team and other staff involved. The summary of this case study is offered for the benefit of the ABC implementation in this company. Furthermore, some suggestions are also made available in this section.

In fact, it is necessary to note that nine benefits were identified from the ABC implementation, namely (1) Decision-making on the pricing policy, (2) ABC system could give clearer picture of the product costing, (3) Increased effectiveness in the organisation, (4) Cost allocation in the manufacturing, (5) Cost reduction, (6) ABC implementation led to some other developments in internal accounting systems, (7) Control systems, (8) Planning systems, and (9) Utility benefits of ABC output.

Obviously the company has a particular objective which is to use this application for decision-making strategy and increased effectiveness in the company. It could be stated that those objectives were not achieved to the company's expectations; furthermore that the findings found that the quality of the ABC information as a substantial output from the ABC implementation is still questionable. Under this circumstance it is possible to conclude that the output of the ABC implementation cannot accurately represent the cost of products at this time. The researcher has attempted to establish the factors that affect the output of the ABC implementation and these can be classified as follows:

Firstly, the implementation team and the staff involved are the two groups of people who have to be concerned. The research has found that the main difficulties experienced occurred among the implementation team itself. It was apparent that the implementation team has been selected from staff that worked in the department of accounting, and this was the main criteria for selecting team members at TPC. Moreover, the implementation team members have not previously worked in different departments within the organisation. Indeed, the implementation team is not the multidisciplinary team that is normally required to conduct an ABC project. Obviously, the company did not comprehend this point at all.

Moreover, the adequacy of the knowledge base of the implementation team was another issue of some concern. It was apparent that the implementation team had prior ideas about ABC

but these were less than adequate. After they were selected as part of the implementation team, they had to attend seminars on accounting systems, including the ABC system. However, there was only one period set aside for this seminar and all the attendees were staff from the department of accounting only (including the implementation team). It is possible to note that the implementation team was subject to a lack of sufficient knowledge about ABC because the seminar and training was not sufficient enough for their needs. Finally, it is important to note that not only lack of knowledge, but also lack of training and seminar programs must be considered as a major factor affecting ABC implementation at this company.

Secondly, the difficulties involved design and data gathering. Data was broken down into the stages of identifying the activities in order to determine the cost of each activity, and then determining the quantities of each cost driver associated with each product. Clearly, the research found that the implementation team experienced difficulties in the data collection process, particularly due to the standard forms that the participants had to fill in. The standard forms required too many details. Some questions arising at this point are regarding the quality of the data gathered. The implementation team insisted that they had problems with the reliability of the data. Hence, it is possible to say that the output (e.g. identifying the activity, selecting cost drivers) was erroneous. Nevertheless, the implementation team reported more than 800 activities at the first stage and after that they reduced these down to

400 activities. In terms of the cost drivers, approximately 300-400 were identified. Furthermore, the company is going to be transformed from a Thai State Enterprise into a public company and because of this the implementation team confirmed that they have to continuously update data and that some activities may be changed because the company's structure is being changed.

Thirdly, in terms of resource adequacy, clearly, all the interviewees agreed that they encountered difficulties related to man-power. They insisted that they need more staff, especially accountants, but they have no budget to recruit any new staff. In addition, even though the team has PCs and a stand-alone system to support the ABC project and this seemed ideal, most of the interviewees reported that the capacity of the PCs was not good, they are too old and of a low capacity. Apart from this, it is possible to conclude that the top management support factor was not in effect full support because there were some difficulties. In particular was the number of accountants, lack of knowledge about ABC, and the capacity of the PCs. These are the main important factors that should be brought to the attention of this company.

Fourthly, using the Krumwiede Model (1997) the stage of ABC implementation at TPC can be said to be at the "acceptance" stage. This level of achievement may possibly be explained

by the fact that TPC is currently committed to utilising the ABC information in each department in manufacturing.

Fifthly, there were twelve problems identified in the ABC implementation at this company. Three of these problems have been classified as at high significance level. It is important to note that those problems must be seriously concerned and made subject to in-depth investigation. These are (1) privatisation, (2) organisation culture, and (3) lack of staff motivation. Nevertheless, nine moderately significant problems have been identified, namely (1) choice of activities and difficulty of identifying activities, (2) poor quality of information, (3) too much data collection, (4) reliable data, (5) inadequate size of ABC team, (6) lack of production information, (7) lack of knowledge and training about ABC, (8) difficulty of identifying cost drivers, and (9) increased workload. It is important that those problems are addressed and investigated. However, it is also important to note that no problems at all have been categorised at the low significance level.

Finally, there are several essential and key factors that might affect the ABC implementation process in this company. Hence, it is possible to state that the quality of the ABC information was still questionable, and therefore it is important to note that the output of the ABC implementation can not be said to represent the accurate costs of products at this time.

Chapter 7

Case Study 2: Metropolitan Electricity Authority

Invasions can be resisted, but not an idea whose time has come.
Victor Hugo

7.1. Introduction

The Metropolitan Electricity Authority (MEA) is a state enterprise under the Ministry of Interior. It was established on August 1, 1958 under the Metropolitan Electricity Authority Act 1958 by combining Bangkok Electric Authority (Wat Liab) with Samsen Royal Electricity Authority under the Department of Public Works and naming the new organisation “The Metropolitan Electricity Authority”. MEA divides customers into the following categories: residential, small general service, medium general service, large general service, special business, government institute, non-profit organisation, and public lightings. The organisation was responsible for generating and selling electrical power to the metropolitan areas, including, Bangkok Metropolis, Samut Prakan, and Nonthaburi Provinces covering 3,192 square kilometres until 1961 when the generating plant was transferred to Yanhee Electricity Authority, which was later renamed the Electricity Generating Authority of Thailand. Since then, MEA has been responsible for selling electrical power only. Improvements and development have been carried out in wide range of areas of operation to

increase efficiency in accordance with the government's policies, the Ministry of Interior's policies, and the National Social and Economic Development Plan (MEA 2006).

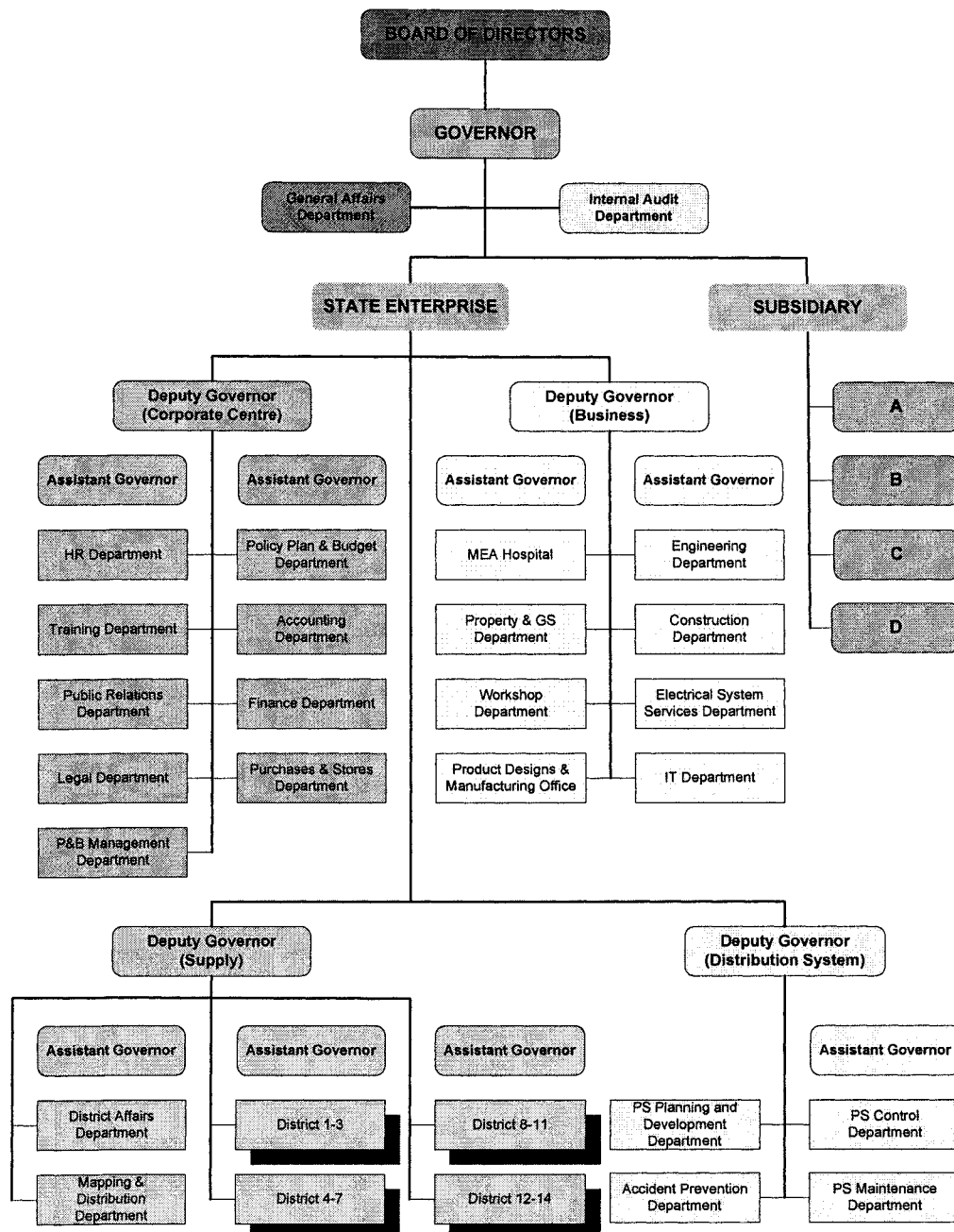
MEA's vision

Becoming the country's leading organisation electricity provider and investing in electricity and energy related businesses both abroad and in domestic markets. Through this MEA aims to be a superb service provider through effective operation in accordance with good corporate governance and good ethics as well as concerning responsibilities for stakeholders, society, and the environment in promotion of the creation of liveable cities (MEA 2006).

MEA's missions:

Operating an electrical power distribution business with sufficiency, reliability, and safety at fair-rate tariffs provided with an efficient and competitive electricity supply service to meet customer and public requirements. To expand investments in potential electricity and energy affiliated businesses both in foreign and domestic markets, concurrently with sustainable development. MEA also aims to operate with good corporate governance and bring appropriate returns to stakeholders (MEA 2006).

Figure 7.1 Organisational Chart of MEA



Source: Annual Report of Metropolitan Electricity Authority

7.2. Rationale of ABC System at MEA

MEA Reform, according to the cabinet's resolution on May 14, 2002 on the approval of the "*Metropolitan Electricity Authority Privatisation Plan*", targeted becoming a listed company by March 2006 and planning for Initial Public Offering (IPO), finally becoming a Public Limited Company listed on the Stock Exchange of Thailand (SET) by June 2008. MEA, in this regard completed the terms of reference for hiring consultants to assist procedures of MEA privatisation effectively and successfully including designing a business plan, business process reengineering, organisational and managerial restructuring for future operations, preparation for a new financial and accounting system, upgrading the information technology system, reforming the human resources management system, preparing legal work and changing management. With the cooperation and support of people and agencies at all levels, the operation is expected to be completed as planned and help facilitate effective business-oriented operation. Obviously, in the preparation of a financial and accounting system ABC implementation is going to be one part of the accounting system crucial to improving cost information at MEA. In fact, MEA needs a costing system that can provide useful information for effective management and decision-making. Under the previous accounting system responsibility accounting classified expenses into controllable and non controllable cost elements and did not provide relevant information for continual improvement in individual performance. By contrast, an ABC system that classifies expenses based on activities will provide more relevant information for individuals to examine and to

continually improve their performance. Finally, the organisation has a policy for decentralising and restructuring into several business units. Hence, the ABC system could be an outstanding tool to support this policy (MEA 2006).

7.3. Profile of Interviewees at MEA

Table 7.1 gives profiles of the interviewees with whom the researcher conducted interviews at MEA. The details are shown as follows:

Table 7.1 Profile of Interviewees at MEA

Interviewee	Position in Organization	Involvement with ABC	Educational Background	No. Of years at MEA
MEA/CEO	Vice President - Finance	Chief Executive	MSc. (Accounting)	30
MEA/DOA	Director of Accounting Department	Director of Accounting	MSc. (Accounting)	31
MEA/PCO	Head of Cost Accounting Division	Project Coordinator	BBA. (Accounting)	30
MEA/TM1	Senior Accountant	Implementation team	MBA. (Accounting)	13
MEA/TM2	Accountant	Implementation team	BBA. (Accounting)	12
MEA/TM3	Accountant	Implementation team	BBA. (Accounting)	14
MEA/TM4	Accountant	Implementation team	BBA. (Accounting)	18
MEA/USER	Director of District Office	User	BSc. (Engineering)	30

Note: Data drawn from face-to-face interviews.

7.4. Research Findings

To form conclusions through the optimal utilisation of the data collected, data analysis was conducted using both statistical and descriptive methods. After each interview data were transcribed and notes prepared, being translated from Thai into English. In terms of statistical analysis, the data was coded and extracted from the transcripts to produce a “*thinking unit framework*” in spreadsheet format for the “*content analysis*” procedure. From this, the most important factors for ABC implementation at MEA could be identified, which is the main purpose of this research. The descriptive analysis and findings from the interviews are discussed below. However, a measure of reliability of the data is a serious concern, so it was decided to apply the “*triangulation method*”, as mentioned in Chapter 5 (Research Methodology). Finally, the data analysis and the findings are shown as follows:

7.4.1. Demography

Eight employees of this organisation were interviewed, including three employees at management level (CEO, DOA and USER) and five employees at operational level (PCO, TM1, TM2, TM3 and TM4) as shown in Table 7.1. The information in Table 7.2 illustrates the characteristics of the interviewees as follows:

Table 7.2 Characteristics of the interviewees

Characteristics	Categories	Number (N = 8)	Percentage (%)
Gender	Female	7	87.50
	Male	1	12.50
	Total	8	100.00
Educational background	Lower than bachelor degree	0	00.00
	Bachelor degree	5	62.50
	Master degree/ PhD	3	37.50
	Total	8	100.00
Qualification type	Accounting/ Finance	7	87.50
	Other	1	12.50
	Total	8	100.00
Country of graduation	Thailand	8	100.00
	Overseas	0	00.00
	Total	8	100.00
Number of years at MEA	Less than 5 years	0	00.00
	5-10 years	0	00.00
	11-20 years	4	50.00
	More than 20 years	4	50.00
	Total	8	100.00
Work experience in variety department within the organisation	Work experience in variety department	2	25.00
	No work experience in variety department	6	75.00
	Total	8	100.00
Foreign work experience/training	No foreign work experience/training	7	87.50
	Foreign work experience/training	1	12.50
	Total	8	100.00
Knowledge of ABC before implementing ABC in the organisation	Excellent	0	00.00
	Good	0	00.00
	Adequate	0	00.00
	Less than adequate	7	87.50
	No knowledge of ABC at all	1	12.50
	Total	8	100.00

Note: Data drawn from the face-to-face interviews.

Table 7.2 shows the interviewees' profiles in terms of gender, educational background, and working experience. The interviewees were seven women and one man. The lowest level of educational background was a bachelor degree in accounting/ finance in Thailand, and three of the eight had completed master's degrees in Thailand. Fifty percent of the interviewees had experience in accounting of 10-20 years, and another fifty percent more than 20 years. Besides this, twenty per cent had experience in a variety of departments. Additionally,

12.50% of the interviewees had experience working overseas and 87.50% of the interviewees had knowledge of ABC that was considered less than adequate. It is possible to summarise that all the interviewees had very good qualifications and educational backgrounds as well as very good work experience. However, it is important to note that most of them had knowledge or experience of ABC systems that was less than adequate.

7.4.2. Determining Factors

The data were drawn from eight interviewees, consisting of three employees at management level (CEO, DOA and USER) and five employees at operational level (PCO, TM1, TM3, TM3 and TM4), as shown in Table 7.1 and 7.2. Content analysis was employed to identify the most important factors for ABC implementation at MEA. Thirty-two sub-factors were identified. Table 7.3 summarises the sub-factors raised by the eight interviewees who were in fact implementing the ABC system.

Table 7.3 Thirty-two sub-factors in implementing ABC raised by the eight interviewees

	Number of Interviewees (%)
1. ABC implementation action plan	100.00
2. Resistance to new cost accounting system	100.00
3. Support from top management	100.00
4. Providing seminars and training about the ABC system	100.00
5. Clear and concise objectives	87.50
6. Privatisation	87.50

7. Computer software	87.50
8. Selection of ABC team members (all accountants in the department of accounting)	87.50
9. Increased workload	87.50
10. Control system	75.00
11. Support the decision-making	75.00
12. Level of progress of ABC implementation	75.00
13. Data collection using standard forms	75.00
14. Improved customer service satisfaction	62.50
15. External consultant	62.50
16. Utility benefits of ABC output	62.50
17. Stand-alone computer to support ABC system	62.50
18. Lack of information resources	62.50
19. Keeping ABC information up-to-date	62.50
20. Lack of staff time (none of the team worked full-time on ABC project)	62.50
21. Reliable data	62.50
22. Planning for data collection and determined activities and cost drivers	62.50
23. Too much information from the data collection	62.50
24. Evaluated the performance and efficiency in the district office	50.00
25. ABC implementation led to improvements in other departments	50.00
26. Changes in internal staff	50.00
27. Takes up a lot of accounts' time	50.00
28. Complexity of the business process of the organisation	37.50
29. Lack of knowledge about ABC among the staff (the participants)	37.50
30. Organisational issues	37.50
31. Fads and fashions	12.50
32. Revised the standard forms	12.50

Remark: The number of interviewees is shown in percentage as follows:

Number of Interviewees ($n = 8 = 100.00\%$)

Number of Interviewees ($n = 7 = 87.50\%$)

Number of Interviewees ($n = 6 = 75.00\%$)

Number of Interviewees ($n = 5 = 62.50\%$)

Number of Interviewees ($n = 4 = 50.00\%$)

Number of Interviewees ($n = 3 = 37.50\%$)

Number of Interviewees ($n = 2 = 25.00\%$)

Number of Interviewees ($n = 1 = 12.50\%$)

As shown in Table 7.3 these sub-functions were combined and grouped together. It is apparent that thirty-two could be reduced to nine main factors. Nevertheless, it is important to state that the researcher's own judgment was used in classifying the sub-factors into various kinds of main factors. The results are shown in Table 7.4 as follows:

Table 7.4 Thirty-two sub-factors could be reduced into nine main factors

1. Top management support
2. Computer systems
3. Education and training
4. ABC team
5. Objectives of ABC implementation
6. ABC implementation process
7. Benefits of ABC implementation
8. Problems with ABC implementation
9. Level of progress of ABC implementation

7.5. Discussion and Conclusions

Of the eight employees interviewed, different individuals had somewhat different perceptions. The analysis of the case study data has indicated that thirty-two sub-factors and nine main factors can be identified as shown in Table 7.3 and 7.4. The findings are discussed as follows.

7.5.1. Main Factor 1: Top management support

This discussion will begin from this main factor – “top management support” because it is an essential aspect of the ABC implementation that this system cannot be successfully implemented without the wholehearted support of the top management. Top management support is seen as the most important factor influencing the success or failure of any new system in an organisation (IMA 1993), there is much previous research to support this. It is apparent that most of the MEA staff interviewed perceived that those factors were very significant contributors to the successful implementation of ABC at MEA. The interviewees had different perceptions about these factors; there are four sub-factors to support this main factor as follows:

7.5.1.1. Support from the top management (Sub-factor No. 10)

Eight interviewees (100.00% of the participants) raised this sub-factor. Obviously, providing new knowledge for employees in the company is the responsibility of its top management. Moreover, improving employee understanding is one of the main factors in improved effectiveness in the company. Besides this, another significant part of a successful implementation of ABC is training (Compton 1996). However, two interviewees at management level (CEO and DOA), and three interviewees at operational level (PCO, TM1 and TM2) mentioned that the top management gave the implementation team support as much as they could to make sure that implementation would achieve the main objectives of the project in this organisation; for example, convincing the implementation team to attend more seminars about the ABC system, and giving direct orders to all departments to support the implementation team in any way possible. Several interviewees, for example said that,

Interviewee (CEO): Sure, the top management has done many things to support this project to achieve the objectives and also get the best results possible from this project. However, we could get a progress report of this project every month.

Interviewee (DOA): I agree that the top management gave us full support about this project by pushing the implementation team to get more knowledge about the ABC system from everywhere to get more experience about it. Again, the top management had to offer strong support for this project.

Interviewee (PCO): It's a policy from the top management to implement this system, so, they directly ordered every department to offer its full support to the implementation team.

Interviewee (TM1): I could say that if the team would like to get something to support this project, it's not a problem, for example more staff, new PCs, and also they commit to backing up the team when the team has got a problem. Honestly I mean just the top management in the department of finance and accounting only.

Interviewee (TM2): The top management gave the team strong support because they realised that the output of this project could be useful for the management strategy.

However, three interviewees including one interviewee at management level (USER), and two interviewees at operational level (TM3 and TM4) added slightly contrary details, that they needed more support in terms of the amount of staff, particularly the accountants because levels were not sufficient at the moment. Besides, they would like the top management to keep close to this project more so than at present. The interviewees, for example said that,

Interviewee (USER): I need more accounting staff in my district office, it's not sufficient if compared to the numbers of jobs to do everyday. It would be great if I could have more staff, it would support the implementation team to do better job.

Interviewee (TM3): I feel that the top management give us a lot of support, but it still isn't enough in my opinion, such as the number of accountants for this project; we should get more staff.

Interviewee (TM4): I realised that the top management should keep close on this project more than this, because it's a new project here. It looks like the top management want to do this project as their first priority but the truth is the people in the middle management didn't care about this project. So, how could we run this project effectively and get the best results from it?

7.5.1.2. Providing seminars and training about ABC system (Sub-factor No. 15)

Eight interviewees (100.00% of the participants) raised this sub-factor. Accordingly, Compton (1996) argued that it is the responsibility of top management to provide staff with new knowledge. Improving staff understanding is one of the key factors in increased effectiveness in the organisation. Besides this, it is an important component of a successful implementation of ABC anywhere. Apparently, two management interviewees (CEO and

DOA) and one interviewee at operational level (PCO) specified that MEA has a sufficient budget for employees in order to join any seminar or training program continuously, and also MEA has provided seminars for their employees both in-house and externally on a regular basis. The interviewees, for example, said that,

Interviewee (CEO): MEA has got a large budget for employees in order for them to join any seminar and training continuously. We do realise that the employees should refresh their knowledge by taking part in seminars and training from time to time and continuously. The quality of the employees is the most important thing which MEA is always concerned about.

Interviewee (DOA): The department of accounting organised seminars about ABC system for the top management, accountants at the head office, and the accountants at 14 district offices.

Interviewee (PCO): The team has received a lot of information about ABC system very often. Both in-house training and external continuously, however, it was theoretical. It seemed okay in the classroom in my opinion but it was very difficult to do in practice. It was real; it was not just a case study any more. Since the external consultant got involved at the second stage; we found that our knowledge of ABC was not enough for us to run this project. They provided us with more ideas and so on.

In addition, it is important to make it clear that there are two groups of staff that need to attend the seminars programs about the ABC system. The first group is the staff that are to be the participants of an ABC project; the other group is made up of the staff who are to be an implementation team (ABC team). Clearly, it is not important for them to become ABC experts, for the first group (all participants), nevertheless they must understand the need for ABC, its benefits and its key concepts, and also understand the significance of the data they provide. It is a significant point that incorrect answers given to questions asked by the implementation team (ABC team) can lead to an improper system design. Clearly, a lack of

understanding of the proper input required once the system is operational will lead to inaccurate costs. For the second group, the implementation team (ABC team designing and implementing the system, they must comprehend the various approaches, level of scope, and system mechanics available in order to select and integrate those approaches that will result in the most cost-effective system for their organisation. Those who will be providing input for the system must understand the importance of the data they provide. Hence, the seminar programs, designed for the special needs of each major group of staff should be provided to ensure the accuracy of input. Apparently, other views of some interviewees such as the user and the implementation team (PCO, TM1, TM2, TM3 and TM4) indicated that they had attended the seminars. However, the training they received was inadequate and made up of short sessions; it was difficult to understand in a very short time. Moreover, some of the implementation team had to learn a lot of things about the ABC system by themselves. The interviewees, for example, said that,

Interviewee (USER): In my opinion, frankly, it was not enough. Think about it: MEA provided a seminar about ABC for the accountants only, how about other staff that have to be involved in this project? It was not right to do so. MEA has to offer more knowledge about the ABC system at all staff levels. I am not happy about this. I want my staff to better understand this system.

Interviewee (PCO): We found that the knowledge of ABC was not enough for us to run this project at all. They [the consultants] provided us with more ideas and so on.

Interviewee (TM1): The team has obtained knowledge about ABC from a few sources, such as seminars both in-house and external, from journals, academic articles and books. In my opinion, it was enough for the team to do this project but it was more than 70% theory, so it was quite difficult to apply it in the real world when it was not a case study anymore.

Interviewee (TM2): The team organised a seminar about the ABC system for the staff at the district office before the team started to ask them to fill in the standard forms as a part of the data collection. It was a one day seminar and only done once for this project.

Interviewee (TM3): I got a chance to attend the seminar about the ABC system one time before MEA decided to implement this system officially, however, it was about the objectives and benefits that we could get from this system.

Interviewee (TM4): I attended the seminar about the ABC system one time only, after that I tried to learn everything by myself and also read from the documents or book. It seems that I have to learn by doing to get more experience about this job.

7.5.1.3. Clear and concise objectives (Sub-factor No. 4)

Seven interviewees (87.50% of the participants) raised this sub-factor. It is apparent that most of the comments from the interviewees, including two at management level (CEO and USER) and five at operational level (PCO, TM1, TM2, TM3 and TM4) show they knew that it was a policy from top management to implement the system and the main objective was to clarify the cost of services in each district office (MEA has 14 District Offices across Bangkok Metropolis and nearby provinces). The interviewees, for example, said that,

Interviewee (CEO): It's clear that the main objective of the ABC project was to verify the cost of service at each district office.

Interviewee (USER): I had to make them understand about this project by myself. I told them about the objective and benefit they could get from this project. It was a big job for me because it was my decision to implement this system here.

Interviewee (PCO): Our team and their director tried to let the staff know about this project and insisted that this project will help their department to find out about the cost of each process, as the main objective of the ABC project.

Interviewee (TM1): The main idea was to find out how much it costs for each process from the start of the service until its end.

Interviewee (TM2): The director of the district office would like to know the cost of service of each customer.

Interviewee (TM3): The top management would like to know the cost of service in 14 district offices.

Interviewee (TM4): The team informed the staff at the district offices about the objectives and the benefits which they could get from this project such as the cost in their division or department, and also how they could calculate the accurate cost of service etc.

7.5.1.4. Computer software (Sub-factor No. 11)

Seven interviewees (87.50% of the participants) raised this sub-factor. They mentioned that MEA did not buy any special software to support the ABC implementation in the first place. It continued to use Microsoft Excel spreadsheets, customised by the internal staff. Interestingly, team member number one (TM1) stated that “I designed and developed this program to support this project by myself”. The interviewees, for example, said that,

Interviewee (CEO): MEA didn’t pay for any special software, its basic Excel that has been developed by our staff.

Interviewee (DOA): Our staff developed a software program to support the ABC system using Excel.

Interviewee (PCO): It’s just a simple Excel program for this project.

Interviewee (TM1): I am a programmer who designed the software to support the ABC system by using Excel. We did not buy any special software.

Interviewee (TM2): We used the Excel program for this project. It’s been customised by our team.

Interviewee (TM3): We use Excel to support this job, this program has been developed by our staff at Head Office.

Interviewee (TM4): It’s Excel that has been adapted by our staff.

7.5.1.5. Stand-alone computer to support ABC system (Sub-factor No. 20)

Five interviewees (62.50% of the participants) raised this sub-factor. One interviewee at management level (DOA) and four interviewees at operational level (PCO, TM1, TM3 and

TM4) mentioned that they have got PCs set up as a stand-alone system to support this project. The interviewees, for example, said that,

Interviewee (DOA): It is still a stand-alone system used to support the ABC system at the moment. MEA has got one division in the accounting department to take responsibility.

Interviewee (PCO): We used a stand-alone system to support this project.

Interviewee (TM1): It has been a stand-alone from the first place until now to support the ABC system.

Interviewee (TM3): It is a stand-alone computer system used to run this project. You know, my PC is very old and of low capacity, I hope that I can get a new PC; it depends on my boss requesting it for me.

Interviewee (TM4): My PC is on a stand-alone system to support this project.

From the finding above (Section 7.5.1, 7.5.1.1.-7.5.1.5), the results show that there are a few main points to be considered.

First of all, on the positive side, it is apparent that that it was a policy from top management to implement the system, and the main objective was to clarify the cost of services in each of the district offices. It is quite clear that this organisation has got exact objectives in implementing this project. Moreover, the team have their own PCs operating as a stand-alone system to support this project. This seemed to be perfect with regards to hardware and they did not buy any special software to support the ABC implementation, using Excel, as developed by the internal staff. Hence, it is possible to indicate that no lack of management support in case of the equipment in this organisation was apparent. Secondly, the top management gave the implementation team support in order to make sure that this project

would achieve the main objectives by giving direct orders to all departments to support the implementation team in their work.

Firstly, concerning knowledge about ABC systems for the implementation team, MEA has sufficient training budget for employees both in-house and external continuously, particularly convincing the implementation team to attend more seminar about ABC system. It is apparent that the implementation team and the staff involved (participants) had no regular seminars about the ABC system which would have been the main thing they should have done. From the interviewing a strong impression emerged: they accepted that it was inadequate and that the sessions were too short. It was difficult to absorb new knowledge such as information about the ABC system in a very short time. Clearly, it was not sufficient to support them to do a better job in this project, and also they had to learn a lot of things about the ABC system by themselves. Hence, it is possible to indicate that lack of knowledge occurred and this should be one of the significant factors to be given further consideration.

Secondly, in terms of resource adequacy, clearly all the interviewees agreed that they had been subject to difficulties as a result of shortages of man-power. They insisted that they need more staff, especially accountants. Therefore, it is possible to indicate that resource adequacy should be another significant factor that has to be considered.

Not surprisingly, it is possible to conclude that the top management support factor was limited because most of interviewees insisted that there were some difficulties, particularly with the number of accountants and lack of knowledge about ABC. These are the most significant factors that need to be addressed at this organisation.

7.5.2. Main Factor 2: Computer Systems

Two sub-factors are identified in this area, including computer software (Sub-factor No. 11) and stand-alone computers to support the ABC system (Sub-factor No. 20). However, as mentioned earlier under Main factor number 1 (see Section 7.5.1.4, 7.5.1.5), it was found that the implementation team (ABC team) have their own PCs operating as a stand-alone system to support this project. This seemed to be perfect in the case of hardware, also, they did not buy any special software to support the ABC implementation, it is based around using Microsoft Excel spreadsheets as developed by the internal staff. Hence, it is possible to indicate that no difficulties about the efficiency and effectiveness of equipment in this organisation were reported at all.

7.5.3. Main Factor 3: Education and Training

One sub-factor was identified to support this topic, which was providing seminars and training about ABC systems (Sub-factor No. 15). It was identified by eight interviewees (100.00%), including three interviewees at management level (CEO, DOA and USER) and

the implementation team (PCO, TM1, TM2, TM3 and TM4). This has already been discussed in Section 7.5.1.2, and the results show that even though the team had very good educational backgrounds in accounting, the staff, particularly the ABC team, did not attend seminars regularly. In other words, their knowledge about ABC is inadequate for them to do the job properly. In this matter, it is possible to conclude at this point that lack of knowledge about ABC occurred, therefore, this might be one of the main factors to be considered.

7.5.4. Main Factor 4: ABC team

Only one sub-factor was identified to support this topic. It is sub-factor number 12 “Selection of ABC team members”. It is significant to note that the team at MEA were selected from the department of accounting. Interestingly, even Cooper (1990) cited that several important criteria were identified for selecting team members, such as intelligence and flexibility in their approach to problem solving. In addition, he noted that knowledge of accounting was not considered a criteria for selection although it was felt that at least one member of the team had to understand the firm’s existing accounting systems. Besides this, to achieve the objective of the ABC project, the implementation team included members from several disciplines other than accounting or finance (Cooper 1990). It has also been suggested that the team should comprise representatives from various departments in the organisation. Members from across the organisation ensure a broader acceptance due to better communication, transfer of knowledge, and awareness of the benefits (O’Guin 1991).

Obviously, it was not used at all as criteria for selection as mentioned earlier. It seems that all of the team are accountants who have very good background educations and working experience in accounting, and also have been working at the department of accounting for many years (see Table 7.1 and 7.2). However, seven interviewees (87.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and the implementation team (PCO, TM1, TM2, TM3 and TM4). Several interviewees, for example said,

Interviewee (CEO): The ABC team had been selected from the accountants in the department of accounting only. There were 18 part-time accountants for this project.

Interviewee (DOA): MEA has got 18 accountants to support the new accounting system, however, most of them automatically became the ABC team. I have to say it was a fresh team indeed.

Interviewee (PCO): We have got 18 accountants to support the new accounting systems, most of them became the ABC team.

Interviewee (TM1): The team has got 18 accountants to take care of this project in the first place but it was a part-time job for us.

Interviewee (TM2): It was accountants from this department who became the team members.

Interviewee (TM3): The implementation team has been selected from the accountants in the department of accounting at Head Office.

Interviewee (TM4): I work here as an accountant and one part of my job is to participate in the implementation team without any experience about ABC systems at all.

It seemed that MEA were not aware of the criteria that have been addressed in prior ABC research (e.g. Cooper, 1990; O'Guin, 1991; Grieco, 1995). Hence, it is possible to state that the implementation team at MEA is not a multidisciplinary team. Therefore, it is possible to note that this may be one of the main factors that the organisation has to be concerned about.

At this point, from the findings and discussion from Section 7.1-7.4; it may be concluded that:

- ✓ The top management support was limited because most of the interviewees insisted that there were some difficulties about the number of staff, especially accountants for this project (as discussed in Section 7.5.1).
- ✓ No difficulties were experienced about the efficiency of equipment both of computer hardware and software at this organisation (as discussed in Section 7.5.2).
- ✓ The staff, particularly the implementation team at MEA did not attend seminars frequently; training was not sufficient for them to do a proper job (as discussed in Section 7.5.3).
- ✓ The ABC team was selected from the staff that work in the department of accounting – this was the main criteria for selecting the implantation team at MEA. It was not a multidisciplinary team that was required to conduct the ABC project (as discussed in Section 7.5.4).

7.5.5. Main Factor 5: Objectives of ABC

It was apparent that five sub-factors have been recognised for the objectives of ABC implementation at MEA, such as control systems, support the decision-making, improved customer service satisfaction, evaluate the performance and efficiency of the district office,

and fads and fashions. Obviously, Cooper and Kaplan (1988) believed that the ABC system is designed to provide more accurate information about production and support activities and product costs so that management can focus its attention on the products and process with the most leverage for increasing profits, and also that it helps managers make better decisions about product design, pricing, marketing, and mix, and encourages continual operations improvements (Cooper 1988). The interviewees made various statements about these factors as follows:

7.5.5.1. Controlling systems (Sub-factor No. 1)

Six interviewees (75.00% of the participants), two of them at management level (CEO and USER), and four of them at operational level (TM1, TM2, TM3 and TM4) raised this sub-factor. Indeed, O'Guin (1991) stated that the new system known as ABC was developed to understand and control indirect costs. It tells the management team what triggers cost and how to manage it. It is the first true cost management system (O'Guin 1991). Apparently, MEA decided to implement a new system, in order to utilise the ABC information as the control system for improving efficiency in their organisation especially, the 14 district offices. Some of the interviewees clearly indicated that ABC information could help them to reduce or manipulate unnecessary cost, and also they could get a clearer picture of the cost of service in their department also. The interviewees, for example, said that,

Interviewee (CEO): ABC systems could help MEA to improve the control system, and also provide more accurate cost of services.

Interviewee (USER): I decided to volunteer to take part in the ABC pilot project because I would like to apply this as a control system here. Indeed, our district office has 400 full-time staff, clearly, it's a huge cost, so, after ABC has been implemented, you know, I could decrease my staff by up to 20%. This system helped me to improve the efficiency of my staff and increase the quality of work here.

Interviewee (TM1): ABC information would be very useful for control systems as some district offices tried to use this information to reduce the cost of each division and department as much as they could such as by decreases the number of staff and cutting out unnecessary processes in each job etc.

Interviewee (TM2): The top management realised that the ABC information could help in control, in terms of reducing unnecessary costs in each district office, and also they could get a clear picture the cost of service in 14 district offices as well.

Interviewee (TM3): The ABC information has been reported directly to the director of the district office. The reports contain the cost of each activity that occurred each month, and also the same information from the previous month as well. The director will regularly use this information for the control system in their district office.

Interviewee (TM4): It was a big issue at the district office when ABC information was reported to the director because it was their responsibility to sort out the costs that occurred in their district office.

7.5.5.2. Support the decision-making (Sub-factor No. 5)

Six interviewees (75.00% of the participants) raised this sub-factor, including two interviewees at management level (CEO and USER), and four interviewees at operational level (PCO, TM1, TM3 and TM4). The ABC system is important for cost estimating. The products are one of a kind therefore profits depend on how well the organisation estimates costs (O'Guin 1991). Apart from this, it is possible to note that an ABC implementation at MEA has been used to determine the cost of service in each district office across the Bangkok Metropolis and nearby provinces. Some interviewees insisted that ABC information has been utilised widely in each district office for the purpose of decision-making. However,

in terms of the decision-making, it did not mean decision-making about the pricing strategy, it meant decision-making for the reduction of unnecessary costs that occurred in their district office. The interviewees, for example, said that,

Interviewee (CEO): The top management used ABC information for decision-making. It involved planning, controlling and so on here.

Interviewee (USER): I always use the ABC information for decision-making in my district office. It's very useful indeed in my opinion.

Interviewee (PCO): I passed all the information about ABC to the top management regularly, so I expect that they can utilise this for their decisions in some cases.

Interviewee (TM1): In order to offer a very good service to the customer, there are a lot of processes to do in this job. The top management would like to know how much it costs for each process. They want to use this information for decision-making.

Interviewee (TM3): The ABC information could be very useful to support the decision-making process at MEA; however, it depends on the management team to decide whether they will pick it up or not.

Interviewee (TM4): The ABC information will be directly reported to the director of the district office every month. The director will use this information for decision-making about the cost system in their district office.

7.5.5.3. Improved customer service satisfaction (Sub-factor No. 3)

Five interviewees (62.50% of the participants) raised this sub-factor, including three interviewees at management level (CEO, DOA and USER) and two interviewees at operational level (PCO and TM1). It seems that ABC information has woken them up to concerns about costing in the customer service department in which the ABC system has been implemented. Indeed, it is a good warning for each department of customer service in each district office to reduce or manipulate unnecessary costs. Again, one of the main objectives for the ABC implementation at MEA was to improve customer satisfaction, based on the lowest cost of service. Apart from this, it is possible to declare that the ABC system

could provide more information for them to consider and try to decrease unnecessary costs as much as they could, on the condition that the customer is still happy with their service. The interviewees, for example, said that,

Interviewee (CEO): The ABC system has only been implemented at the customer service department in each district office. Our vision is to provide the best service to the customer at the lowest cost, so it's really necessary to know the exact cost of service at each district office, in order to make it clear that it won't cost a huge amount of money.

Interviewee (DOA): The main point was to apply the ABC system in the customer service department only.

Interviewee (USER): I really want to accurately know how much it costs to make my customers satisfied with our service because it is quite a long process to get the service.

Interviewee (PCO): We applied an ABC system into the district offices that involved the customer service as a whole because the main idea was to find out the cost of service that makes our customer satisfied with the service.

Interviewee (TM1): ABC information could provide more details about the process of each job, so the director of the district office used this information to improve their job to increase customer satisfaction.

7.5.5.4. Evaluated the performance and efficiency of the department of customer service in each district office (Sub-factor No. 6)

Two interviewees at management level (CEO and USER) and two interviewees at operational level (TM1 and TM3) raised this sub-factor (50.00% of the participants). As Innes and Mitchell (1991) cited, the ABC system really helps to classify what is going on in an important area. This is a useful tool for getting a handle on overheads (Innes 1991). Furthermore, the ABC system will greatly enhance the ability of the manager to produce product cost reports that are more realistic, appropriate and flexible in order to meet the

expanding needs of operation reporting (Grieco 1995). Finally, therefore, ABC information would be a high-quality technique to ensure more accuracy in the cost of services at MEA for the top management or director of each district office to improve their performance and efficiency in the customer service department by providing the best service possible, at the lowest cost, according to their expectations. Several interviewees, for example, said that,

Interviewee (CEO): MEA has 14 district offices through which to offer the service to the customer, the ABC information could help the director of each district office for their control system and to reduce or eliminate unnecessary cost as much as they can to demonstrate the lowest level of cost of service in their district office.

Interviewee (USER): I found that after 14 district offices implemented this system, it was very useful for the top management to keep their eyes on each district office and use the ABC information to evaluate the performance of each district office realistically.

Interviewee (TM1): The director of the district office used this information to improve their performance by removing some processes from their job to eventually demonstrate the best results of the cost of each process. So, the team found that some district offices could show better performance after ABC had been implemented. Moreover, the top management is concerned about the cost of each district office, so they used this information to regularly evaluate the performance of each district office.

Interviewee (TM3): The top management always concentrates on the costing and tries to evaluate each district office by using the ABC information as reported every month. So, it is quite serious for the director of each district office to keep close and concentrate on their costs and try very hard to decrease them.

7.5.5.5. Fads and fashions (Sub-factor No. 8)

Only one interviewee at management level, the organisation's CEO (12.50% of the participant), mentioned this sub-factor. Indeed, the CEO herself insisted that MEA required the implementation an ABC system because of the needs of the organisation. It was not the

result of fads or fashions at all. The interviewee said that “definitely, it’s not a fashion at all; we implemented this system for the specific purpose as mentioned earlier”.

In conclusion at this point, therefore, from the above findings and discussion (Section 7.5.5, 7.5.5.1-7.5.5.5), it is useful to conclude that the original objectives of ABC project at MEA were regarding:

- ✓ Control systems
- ✓ Support of decision-making
- ✓ Improved customer service satisfaction
- ✓ Evaluation of the performance and efficiency of the customer service department
in each district office

7.5.6. Main Factor 6: ABC Implementation Process

Eight sub-factors have been classified to support this area. The MEA staff interviewed perceived that these sub-factors were involved in the ABC implementation process in this organisation. Therefore, they will be presented as a whole process from the beginning until the end, step by step. In general, the ABC system has been widely accepted for many years as a better system for measuring resource consumption than traditional cost accounting systems, and it has been used successfully by a large number of companies. Furthermore, it has mainly

been applied to manufacturing, but can also be used in service industries (Cooper 1990); (Rotch 1990); (Shield 1996). Besides, many organisations are doomed to failure before they begin implementing the ABC system. In part this is due to a number of misconceptions about ABC systems and what they are actually designed to accomplish (Compton 1996). Hence, the main decisions inevitably need to be made before an ABC system can be implemented (Compton 1996). The interviewees had varying perceptions about those factors as follows:

7.5.6.1. ABC implementation action plan (Sub-factor No. 2)

All the interviewees (100.00% of the participants) raised this sub-factor, including three interviewees at management level (CEO, DOA and USER) and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). In fact, from the interviewing, most of the interviewees indicated in the same concern. Interestingly, MEA have established their own procedure to implement an ABC system. First of all, they decided to implement an ABC system in the customer service department in each district office. Secondly, they considered continuing it by establishing a pilot project as the first stage of the project; however, they expected to extend this to another six departments as the second stage, and to seven more departments as the final stage. Apparently, one of the district offices was volunteered to be the subject of the pilot project. As Grieco (1995) suggested, an ABC project does not need to be implemented all at the same time (Grieco 1995). A small or mid-sized organisation might be able to move straight into an implementation of ABC, a full organisation-wide

implementation of ABC at a large firm is usually ill-advised unless preceded by one or more pilot projects. Instead, the insights gained from the pilot project can be used to save time and resources when a full implementation of ABC is begun (IMA 1993). Thirdly, they were going to run the project using only internal staff from the department of accounting they would not hire external consultants. This was the action plan for the project in this organisation. Hence, it is strong comment that they have done the right thing by establishing a pilot project in the first place because MEA has fourteen departments of customer services in fourteen district offices across the Bangkok Metropolis and nearby provinces. A pilot project is the best way of applying a new system here; obviously, the insights gained from the pilot study can then be used to save time and resources when a full implementation of ABC is begun. The interviewees, for example, said that,

Interviewee (CEO): MEA start to implement ABC by establishing a pilot project at first. Clearly, we have 14 district offices across Bangkok and the metropolitan area and two provinces, one district office had been selected as the pilot project.

Interviewee (DOA): We got started by launching the pilot project from one of the district offices (MEA has 14 district offices). Indeed, one district office volunteered to be the subject of the pilot project.

Interviewee (USER): My district office was volunteered for this project as the pilot project.

Interviewee (PCO): Our plan was to establish the pilot project by selecting one of district offices, luckily, one of them volunteered to be the pilot project.

Interviewee (TM1): The ABC project started from one district office in the first place before extending to the other 14 district offices.

Interviewee (TM2): One district office was volunteered to be the pilot project at first because their director was interested in this system, and we extended it to the other district offices after that. It took a year for the pilot project.

Interviewee (TM3): It started from one district office at first and enlarged to 14 district offices finally.

Interviewee (TM4): This project started from one district office as a volunteer before being expanded to other the 14 district offices.

7.5.6.2. Providing seminar and training about ABC system (Sub-factor No. 15)

This sub-factor was identified by eight interviewees (100.00% of the participants), including three interviewees at management level (CEO, DOA and USER) and the implementation team. Clearly, it has already been discussed in Section 7.5.1.2. Again, the finding showed that even though the team had very good educational backgrounds in accounting, nevertheless the staff, particularly the ABC team, did not get to attend seminars regularly, or in other words, their knowledge about ABC was not adequate enough for them to do their jobs properly. Under these circumstances it is possible to conclude that lack of knowledge about might be one of the main factors to be considered.

7.5.6.3. Data collection using standard forms (Sub-factor No. 22)

Six interviewees (75.00% of the participants) raised this sub-factor. One is an interviewee at management level (DOA) and five are interviewees from operational level (PCO, TM1, TM2, TM3 and TM4). However, as mentioned about the procedure of ABC implementation at MEA earlier (see Section 7.5.6.1, 7.5.6.2), finally, the implementation team made a decision to design the standard forms as an instrument for gathering information for the ABC project, as the next step of the implementation process here. The interviewees, for example, said that,

Interviewee (DOA): The implementation team used the standard forms for data collection at MEA.

Interviewee (PCO): The team used standard forms for data collection.

Interviewee (TM1): Standard forms have been designed by our team using the details from the job description and additional information from the staff.

Interviewee (TM2): The team used the standard form as the instrument to collect the data. It's been designed using the job description as the outline.

Interviewee (TM3): The team designed the standard forms for data collection.

Interviewee (TM4): Standard forms have been used for the data collection process.

7.5.6.4. Planning for data collection and determined activities and cost drivers

(Sub-factor No. 29)

Five interviewees (62.50% of the participants) raised this sub-factor, they were the implementation team. In general the team had a clear picture of where they were going for data collection. Indeed, the aim of data collection is to accumulate the information necessary to identify activities and cost drivers. However, there are three primary sources for the information needed to develop an ABC system: people, the general ledger, and the organisation's computer system. Clearly, the people who do the work are the major source of information. They can provide information about the organisation's activities, the resources consumed and the performance measures used (IMA 1993). Therefore, the team decided to use one of the primary sources "people" for gathering information. The interviewees, for example, said that,

Interviewee (PCO): It was apparent that a few hundred activities had been classified at the first time from the huge body of information gathered from the data collection. The implementation team tried mapping and grouping these in order to determine the main activities and select the cost drivers for each job in the customer service

department. After we have brought in the consultancy team, they mentioned that the implementation team determined too many activities.

Interviewee (TM1): The team got started with three steps; (1) the team analyzed the activities from job descriptions to determine the activities and cost drivers in advance and establish the first draft of the standard form for the participant to fill in; (2) the team passed these forms to the staff at the district office and gave them a chance to check these forms and with the option to add more information to the forms; (3) the team rewrote the forms again based on the additional information and tried to establish the final standard forms for the participants to fill in. Next, the team (4) informed employees about the ABC system by organising a seminar and telling them about the objectives and what benefits they could gain from this project. The team started to do data collection at this point; (5) the team established the main activity six months after that with approximately 120 activities and approximately 55 cost drivers. There are now 44 activities at the moment.

Interviewee (TM2): The team identified all the activities from the job description at the first place and passed this report to the staff at the district office to confirm and add more detail about their job if they wanted to. The participants filled in the standard form for us every week and sent it back to the head office.

Interviewee (TM3): The team prepared the first draft of the activity, based on the job description and passed it to the staff at the district office to comment on and make sure that the details covered all areas in the district office.

Interviewee (TM4): The staff at the district office have to read the forms that are prepared by the team, and fill in the forms for us. However, the staff can give us more information or suggestions about the details in this form to make sure that it covers all area of their jobs. There emerged a huge amount of additional information later after the team got the forms back.

Interestingly, the findings show that the implementation team analysed the activities from the job description to determine the main activities and cost drivers in advance, and used this information to establish the first draft of standard forms, as the instrument for the data collection. In the next step, the implementation team passed these standard forms to the staff at the department of customer service which volunteered to be the pilot project to give the participants a chance to check and add more information to the standard forms to make sure

that the standard forms covered all areas of their working process. From this point, the implementation team rewrote those forms based on the additional information and tried to establish the final standard forms, ready for the data collection process. In the next step the implementation team provided a seminar about the ABC system for all participants, and told them about the objectives and what benefits they could gain from this project, and the participants started to fill in the standard forms as the data collection at this point. Finally, the implementation team established the main activities six months after that with approximately 120 activities and 55 cost drivers classified at that time; however, this has been reduced down to 44 activities at present.

7.5.6.5. Revised the standard forms (Sub-factor No. 32)

One interviewee (12.50% of the participants) at operational level raised this sub-factor. The interviewee said that “the implementation team tried to revise the standard forms from time to time, in order to make sure that the participants could fill in the forms appropriately”. Therefore, from the additional finding, it is possible to state that the standard forms were developed and revised from time to time to ensure that the implementation team could get the right kind of information in the end.

7.5.6.6. Reliable data (Sub-factor No. 27)

The implementation team (87.50% of the participants) raised this sub-factor. However, the implementation team collected the data by using standard forms as the instruments at MEA. The findings show that some information from the standard forms might have some problems because some were inaccurate. Therefore, the implementation teams had to recheck that information by comparing the information given by two people doing the same job or also by collecting data every month and comparing it later, in order to confirm the reliability of those data as well as they could. The interviewees, for example, said that,

Interviewee (PCO): Some information from the data collection was not accurate, because the standard forms were difficult to fill in. It's too complicate. Also, some staff filled the standard forms by copying from another member of staff or just got it done without any responsibility.

Interviewee (TM1): The team does cross-check some information from time to time by comparing the same job done in different district offices, in order to make sure that the information is consistent and reliable.

Interviewee (TM2): The team has to check the details in the standard form regularly to make sure that it is accurate in some ways such as by comparing or asking them directly by telephone.

Interviewee (TM3): The team has to check all the details from the standard form step by step to make it clear that it's acceptable.

Interviewee (TM4): I found that some information I'd got was not acceptable such as they took three to four hours for some maintenance job – replaced a 10 metre cable in the customer's home – it's impossible in my opinion.

7.5.6.7. Keeping ABC information up-to-date (Sub-factor No. 19)

Again, the implementation team (87.50% of the participants) raised this sub-factor. Apparently, the finding indicated that the team needs to keep performing more data collection. In fact, it is not only to get more accurate information or recheck the reliability of

the information to improve some activities but also to adjust some activities following privatisation. The interviewees, for example, said that,

Interviewee (PCO): The implementation team should update ABC information continuously to make sure that it is trustworthy.

Interviewee (TM1): The team had to update most of the information after the external consultant got involved.

Interviewee (TM2): The team has to keep updating information again because the privatisation means that some activities may be changed.

Interviewee (TM3): The team asked the participants to fill in the standard forms every week to keep information up-to-date to recheck the reliability of the information from them.

Interviewee (TM4): Some data has to be updated regularly because the team found that some data still is not consistent.

7.5.6.8. External Consultant (Sub-factor No. 14)

Five from eight interviewees (62.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and three interviewees at operational level (PCO, TM1 and TM3). However, from the interviews, it is important to make it clear at this point that there were two sessions about ABC implementation in this organisation. Firstly, MEA was implemented in this system using internal staff from the department of accounting. Obviously, it can be stated that this project has been done perfectly, started from one district office, as the pilot project, and extended to fourteen district offices at last (see Section 7.5.6.1). However, MEA decided to hire the well-known consultant company named “Price Waterhouse” as the advisor to prepare the organisation for privatisation. Therefore, the external consultant advised that MEA should integrate the ABC system from a stand-alone system into a fully integrated system. Hence, the external consultant started to be involved in

the ABC system at this point. Clearly, the finding showed more significant details that even though they advised on how to transfer from an integrated stand-alone system to a main accounting system it was not easy to do. Besides this, the consultants were very busy and they never asked about the work progress that the implementation team had carried out – the consultant wanted to do it their own way. Finally, it was found that the internal staff could handle the project better than the consultants because the consultant did not clearly understand the organisation's business, so they could not help to sort out some problems. The interviewees, for example, said,

Interviewee (CEO): MEA have to give credit to the team who were our internal staff who took full responsibility for the ABC project. We didn't hire any external consultant for this. We realised that nobody knows our business better than our own staff. However, we hired external consultant for setting up the financial and accounting system after we established the ABC project. The consultants offered some ideas about the ABC project in case the implementation team had any problems.

Interviewee (DOA): MEA hired the consultant company to help us improve the ABC system here, it was not a new start but it was to increase the efficiency of the project. Besides this, the consultant company helped us a lot to provide a clearer picture of the ABC system at MEA than before. Some problems were sorted out very quickly and were accepted by the MEA staff.

Interviewee (PCO): We didn't hire external consultants at first to help us implement this system. We ran this project through our own staff. When MEA hired the consultants, they gave us some advice and tried to integrate the ABC system into the main accounting system. It was not easy to do it.

Interviewee (TM1): The pilot project had been done and extended to six other district offices. After that, MEA hired external consultants to implement the whole financial system here, so the cost accounting system was one part of this project at that time. It was not a very good idea at that time because the consultants were very busy and they never asked us about the ABC project that our team had done. The consultants wanted to do it their own way. Finally, we found that we could handle this project better than them; it covered more areas and was more effective.

Interviewee (TM3): After MEA hired the consultant company; they always gave us different ideas about the ABC system. It was really useful but sometimes the

consultants did not understand our business clearly, so they could not help us to sort out some problems.

At this point, from the above discussion (Section 7.5.6, 7.5.6.1-9.5.6.8), it is clear that the ABC implementation process at MEA involves eight processes. First of all, MEA established an action plan for the ABC implementation, as an outline of the project. However, an ABC system has been implemented only in the department of customer service in each district office. It was not implemented throughout the whole organisation. One district office was volunteered to be the pilot project before extending this to all 14 district offices across the Bangkok Metropolis and nearby provinces. Apart from this, the implementation team has been selected from staff at the department of accounting only, and the implementation team planned to perform data collection using standard forms as research instruments. The standard forms had been established using the details from the job description in order to determine the main activities and cost drivers in advance, and revised these to ensure that the implementation team received accurate information that covered all working areas in the department of customer service. Moreover, the reliability of the data was one of the topics that the implementation team was concerned with. Due to this factor, the team used triangulation to verify the accuracy of the data, such as by comparing data from two people doing the same job, or by collecting data over a few months and comparing it later. In addition, all data were stored on a stand-alone computer system, using Excel to process the outputs. Finally, approximately 120 activities and 55 cost drivers were classified at the first

attempt; however, this has been reduced down to 44 activities at the moment. Moreover, the implementation team needs to perform further data collection to get more accurate data to improve some activities since privatisation has caused changes within the organisation.

7.5.7. Main Factor 7 Benefits of ABC Implementation

Six sub-factors were identified to support this main factor. In general, Cokins (1999) argued that the managers who understand the ABC system realise that accurate, relevant cost data enables them to identify and achieve innovation and continuous improvement; these are the benefits they can take from an ABC implementation. Moreover, Cooper (1991) and Mitchell (1994) have both stated that the use of an ABC system in both manufacturing and non-manufacturing firms is advocated to be valuable. For example, many researchers have suggested that ABC increases the accuracy of cost allocation to products. It is also believed that greater processing of the cost information and subsequent realisation of accurate and relevant cost measurements are beneficial for decision making (Hicks 2005). Mitchell also advocates how decision making is enhanced by the cost information that ABC provides, as new types of information are able to be viewed (Mitchell 1994).

Four of these in this topic have been discussed to support main factor number 5 (see Section 7.5.5.1, 7.5.5.2, 7.5.5.3, and 7.5.5.4). The findings show that four were the initial objectives

of the ABC implementation at this organisation. These can be identified as the benefits¹ of ABC implementation, as confirmed by some researchers that an ABC system can help an organisation to increase the accuracy of its costing of services and improve decision-making (Innes 1996). Therefore, there are two more sub-factors to be discussed as follows:

7.5.7.1. Utility benefits of ABC output (Sub-factor No. 17)

Five interviewees (62.50% of the participants) raised this sub-factor, including three interviewees at management level (CEO, DOA and USER) and two interviewees at operational level (PCO and TM1). The interviewees, for example, said that,

Interviewee (CEO): ABC information is very useful for the director of each district office concerning costing in their department. Every district office tried to control costs in order to demonstrate their best performance as MEA evaluated them every month.

Interviewee (DOA): It was quite clear that some information from the ABC implementation offered more details about cost of service at each step. It is very useful for each district office to know their costs clearly.

Interviewee (USER): I always use the ABC information for the purpose of decision-making. It helps me to have more confidence in reducing unnecessary costs in this district office, and so on.

Interviewee (PCO): I expect that they could utilise the ABC information for decision-making in some cases as well. And also, we could have the information in terms of the cost of service at each district office by using the ABC system.

Interviewee (TM1): The top management really wanted to know the exact costs of each district office, so they realised that ABC could help them to get the right answer. It's the expectation of the ABC system. There is now a clear picture of how much it costs for services for each customer.

¹ Innes, J. and Mitchell, F. (1996, p. 27) stated that the benefits of ABC such as provides more accurate product cost, relevant to managerial decision-making at the strategic level, is relevant for cost management and performance assessment at an operational level, and has the potential to improve cost estimation.

MEA can gain more benefits from this project in terms of the cost of service in each customer service department in 14 district offices. Besides this, ABC information can provide more details about costing, and give the top management or director of the district office information with which to regularly evaluate the performance of each district office.

7.5.7.2. ABC implementation led to improvements in other departments (Sub-factor No. 16)

Three interviewees (37.50% of the participants) raised this sub-factor. Two of them are interviewees at management level (CEO and USER) and one interviewee at operational level (TM1). The interviewees, for example, said that,

Interviewee (CEO): As you know, we have 14 district offices that the ABC system has been implemented in within the department of customer service, as there is one department in each district office. Since the ABC system has been used, we found that other department such as the engineering department, they realised about costing in their department as well, because they would like to know that how could they manage costs and try to cut out unnecessary costs from their department.

Interviewee (USER): My district office has 13 departments; the head of each department is concerned about the costing in their department. Using the ABC information, it is a good way to manage and increase efficiency in their department.

Interviewee (TM1): I heard from some departments such as the training department. They mentioned that ABC information could give them a clear picture about their costs; finally, they could learn the cost of each seminar and training program each time as well.

Therefore, the findings indicate that other departments, such as the department of engineering, became conscious about costing in their department because they wished to

know how they could manage their costs and try to reduce any unnecessary cost from their department.

At this point, as discussed above in Section 7.5.5.1, 7.5.5.2, 7.5.5.3, and 7.5.5.4 and also Section 7.5.7.1, 7.5.7.2, six sub-factors were identified and supported this main factor. The main results show that after the ABC system had been implemented, it provides more accurate details of the cost of services and also provides more details about cost information; it leads to some other developments in this organisation (e.g. department of engineering). In addition, it is important to note at this point all ABC information gathered has been used for the control system, in supporting decision-making to improve customer service in each district office and also used for evaluating the performance and effectiveness in 14 district offices.

7.5.8. Main Factor 8: Problems of ABC Implementation

Even though supporters have claimed that an ABC system can reduce unnecessary cost as well as providing benefits as previously mentioned in Section 7.5.7, many survey results show that few organisations have implemented this technique. Again, some evidence during the early 1990s illustrated adoption rates ranging from approximately 10% of organisations in the UK and Ireland to 14% in Canada (Armitage 1993; Clarke 1996; Innes 1991). Research in the UK in 1994 and 1999 showed that consideration of the ABC system and

actual adoption dropped, while reported rejections of the ABC system increased over four years between the two studies that both looked at ABC adoption (Innes 2000). Therefore, this has prompted this research to extensively explore the problem factors that could influence or be associated with ABC implementation in this organisation. The findings show twenty-two sub-factors as the problems linked with ABC implementation at MEA.

Summarising the problems raised by the interviewees involved with the ABC implementation at MEA, it is important to state that the researcher asked the interviewees “what problems do you foresee with ABC” and did not attempt to influence the interviewees. This means that in the findings on this topic the researcher has used his own judgment in classifying the interviewees’ answers into various categories based on the number of the interviewees from most to least as follows:

Table 7.5 ABC problems perceived by eight interviewees

	Number of Interviewees
1. SF09: Resistance to new cost accounting system	8
2. SF13: Increased workload	7
3. SF21: Lack of information resources	5
4. SF25: Lack of staff time (none of the team worked full-time on ABC project)	5
5. SF27: Reliable data	5
6. SF30: Too much information from the data collection	5
7. SF07: Privatisation	4

8. SF19: Changes in internal staff	4
9. SF26: Takes up a lot of accountants' time	4
10. SF24: Complexity of the business process of the organisation	3
11. SF31: Lack of knowledge about ABC among the staff (the participants)	3
12. SF33: Organisational issues	3
13. SF32: Revised the standard forms	1

The researcher categorises these problems into three levels as follows:

- **High Significance Level (HSL):** this means that if a number of the participants, between 6-8, perceive this problem, then it must be serious and demands in-depth investigation.
- **Moderate Significance Level (MSL):** this means that if a number of the participants, between 3-5, perceive this problem, then it is a concern and requires investigation.
- **Low Significance Level (LSL):** this means that if a number of the participants, less than two, perceive this problem, it may have no significant correlation with the ABC implementation process.

High Significance Level (HSL): Table 7.5 showed that there were two sub-factors identified as HSL problems, including (1) resistance to new cost accounting system, and (2) increased workload.

Eight interviewees listed “resistance to new cost accounting system” in two ways. Under the first view, three interviewees at management level and two interviewees at operational level indicated that because the policy to implement this system came from the top management there was not any resistance from the staff at all. On the other hand, three interviewees at operational level argued that some staff felt uncomfortable about the new system because they were scared of losing their jobs. In addition, the last problem which has been classified at this level (HSL), seven interviewees (two interviewees at management level and the implementation team) mentioned that ABC seems to mean an increased workload for them. In turn, the researcher is able to identify this as one of the problems that occurred in this organisation.

Moderate Significance Level (MSL): Table 7.5 showed that there were 10 problems at this level, as perceived by the interviewees, including (1) lack of information resources, (2) lack of staff time, (3) reliable data, (4) too much information from the data collection, (5) privatisation, (6) changes in internal staff, (7) takes up a lot of accountants’ time, (8) complexity of business process of the organisation, (9) lack of knowledge about ABC among the staff, and (10) organisational issues.

First of all, “lack of information resources and reliable data” was mentioned at this level (MSL) by five interviewees, one interviewee at management level (DOA) and some of the

implementation team (PCO, TM1, TM2, TM3 and TM4). Hence, it is possible to ask whether the outputs (ABC information) of this project give a clear picture of the cost of services because of the quality of the data from the data collection and its reliability. In addition, it is possible to state that this problem is related to the “lack of staff time”, as pointed out by the implementation team. Obviously, no one worked full-time on this project, as indicated by the implementation team, in spite of the fact this project involved a great deal of work. As Bruesewitz and Talbott (1997) stated, implementing ABC in complex organisations requires six full-time employees for this kind of project. Apart from this, the implementation team expressed more opinions that there was “too much information from the data collection, and also it takes up a lot of accountants’ time”. It is not surprising that this problem was mentioned since it happens in most cases of implementing ABC. For example, Innes, and Mitchell (1991) suggested that clearly, the adopting of ABC takes time; Cobb et al. (1992) remarked in their research findings that ABC seems very time-consuming for accountants; and Bruesewitz and Talbott (1997) stated that implementing ABC in complex organisations is both costly and time-consuming. However, as mentioned above this seems to apply to any organisation getting started in implementing a new system, particularly, an ABC system. It will occur more or less since it depends on the complexity of the business process in each organisation. Interestingly, it was indicated by two interviews at operational level (TM1, TM3 and TM4) that it was one of the problems that occurred in this organisation.

In addition, another surprising factor was the “lack of knowledge about ABC among the staff”. Some interviewees stressed that even though they attended the seminar program about ABC systems, it was insufficient because they had no previous idea about this new system. In fact, as Compton (1996) suggested, training is crucial for effective implementation, execution, use, and acceptance of an ABC system. Training is an ongoing process occurring throughout the life of a project (Compton 1996). Hence, it is important to state that MEA did not provide adequate and continuously training in the ABC system for the staff including the implementation team.

Furthermore, four interviewees (DOA, USER, TM1 and TM4) stressed the problem of the impact of the ABC system on the organisation structure because of privatisation. They emphasized that this organisation is on the way to privatisation; therefore, the organisation structure is undergoing much change. As a result, it is a significant point to note that it is unavoidable for change to affect some activities.

Finally, and interestingly, some interviewees indicated the problem of “organisational issues”. Three interviewees at operational level (TM1, TM3 and TM4) stressed that some staff did not want to be involved and so they did not pay attention to supporting this project, even though the top management ordered all departments to support this project appropriately. Apart from this, the implementation team realised that one more problem

occurred from this matter, it was changes in internal staffs, as mentioned by four interviewees. The internal staff that provided the information to the implementation team changed all the time. That is why the implementation team regularly found that some information was unstable. It is possible to say that this problem might have had an impact on the reliability of the output also.

Low Significance Level (LSL): The remaining problem identified at this level was revised standard forms, as mentioned by one interviewee at operation level (TM1). Clearly, the interviewee said that “the team tried to revise the standard forms from time to time, in order to make sure that the participants could fill in the forms appropriately”. However, it is quite positive to note that this problem should not be a difficulty obstructing any progress of the ABC implementation in this organisation at all.

At this point, Table 7.5 shows that there were two sub-factors identified as high significance problems, as discussed above. It is important to note that those problems must be seriously considered and given in-depth investigation in order to understand why the project has not provided as good output as expected. However, there were ten moderate significance problems perceived by eight interviewees. It is important to say that those problems have to be addressed and investigated because it may be that the system did not achieve the objectives partly because of those factors. Surprisingly, there is only one low significance

problem perceived by eight interviewees. Since it has been categorised at a low significance level and it has no significant correlation with the ABC implementation process in this organisation at all.

7.5.9. Main Factor 9: Level of progress of ABC implementation

Finally, the interviewees were asked about the level of progress of ABC implementation, based on the Krumwiede Model (1997). This model had been adapted from the IT stage model, based on organisational change to the implementation of ABC. There are six stages to the ABC implementation process, including (1) initiation, (2) adoption, (3) adaptation, (4) acceptance, (5) routinisation, and (6) infusion (Krumwiede 1997). However, it is important to note that the researcher was very surprised to find that none of the interviewees had any idea about this model at all. Hence, the researcher had to spend approximately half an hour to explain this model, using the same table as shown in Table 7.6. Interestingly, their answers showed that the level of progression is up to 80% as indicated by five interviewees (three people at management level and two people at operational level). However, it is important to note that three interviewees at operational level who were directly involved in the ABC project could not comment on this. Most of them still answered that “I am not sure about this”. Their responses are shown in Table 7.6 as follows:

Table 7.6 Level of progress of the ABC implementation at MEA

Stage of the Implementation	Percentage of the progression at each stage (Total = 100%)	Evaluate by the participants (Total = 100%)							
		CEO	DOA	USER	PCO	TM1	TM2	TM3	TM4
Stage 1: Initiation	16.66%								
Stage 2: Adoption	33.32%								
Stage 3: Adaptation	50.00%								
Stage 4: Acceptance	66.64%								
Stage 5: Routinisation	83.30%		70%	70%		70%		Not sure	Not sure
Stage 6: Infusion	100.00%								Can not tell

Note: This table has been adapted by the researcher; based on the Krumwiede Model (1997).

At this point, as shown in Table 7.6, therefore, it is possible to classify the stage of ABC implementation at MEA as the “Acceptance” stage as indicated by three interviewees (DOA, USER and TM1). However, following the interviewing, the researcher has formed the view that this system has reached the routinisation stage as indicated by two interviewees at management level (CEO and PCO) on the grounds that the outcome of the ABC project here has been used as a part of normal activities in the organisation. Clearly in this stage; ABC is accepted and used by persons outside the accounting/finance function for decision-making; findings indicated that it has been used in the department of engineering.

9.6. Summary

The results of this case study have obvious implications for ABC implementation at MEA. It contributes to MEA itself, the ABC team, and staff involved. The summary of this case study is provided in terms of the ABC implementation at MEA. Moreover, some suggestions are also provided in this section.

The main findings indicate that after an ABC system has been implemented it provides more accurate details of the cost of services and also provides more details about cost information. Nevertheless, MEA had a particular objective, which is for the system to act as a control system as well as to support decision-making to improve the customer service satisfaction, based on the lowest cost of service but highest level of customer satisfaction. It was also to link to the internal competitive strategy in order to improve performance and increase effectiveness in the 14 district offices. Besides this, it led to improvements in other departments such as the department of engineering. However, from the interviews it is obvious that the ABC system at MEA has still not achieved this objective because the output of the ABC system has not yet demonstrated this capacity well enough. In these circumstances, the researcher attempts to determine the factors that affect the output of the system. They can be classified as follows:

First of all, the top management support was limited – most of the interviewees insisted that there were some difficulties. This is a significant factor which has to be addressed at this organisation. Clearly, there are two groups of people concerned. This is the implementation team and the staff involved. The research has found that the main difficulties experienced were among the implementation team itself. It was apparent that the implementation team was selected only from the department of accounting and even though they had very good educational backgrounds as well as very good work experience within MEA for many years, however, most of the implementation team continued working only in the department of accounting. That is, they have no work experience in other departments within the organisation at all. Furthermore, MEA was not aware of this point, in spite of the fact that implementation teams should be multidisciplinary in most ABC cases. Apparently, the adequacy of the knowledge base of the implementation team was another issue of some concern. It was obvious that the implementation team had less than adequate understanding of ABC at first. After they were selected as part of the implementation team, they had to attend seminars on ABC system. Some team members pointed out that this was too little to allow them to understand this system. They had to learn about ABC by themselves, such as by reading or consulting with other team members. Apart from this, it is possible to state that the implementation team was subject to a lack of sufficient knowledge about ABC, because it was too short and was not enough for their need. In addition, in terms of “staff involved” the research has found that there were some weak points experienced which are exactly the same

as those of the implementation team because the seminar program was too short and was not adequate for them. Hence, it may be that the system did not achieve the project objectives partly because of this factor. Finally, in these circumstances, it is important to note that not only the weakness in the implementation team structure was also lack of knowledge and that the seminar programs concerning the ABC system must be considered as major factors affecting ABC implementing in this organisation.

However, in terms of the computer systems, this seemed to be perfect both in computer hardware and software. The organisation did not buy any special software to support the ABC implementation; it is Microsoft's Excel program, customised by the internal staff. Hence, it is possible to indicate that there were no difficulties about the efficiency or effectiveness of the equipment in this organisation.

The next step involved design and data gathering, it is clear that the ABC, the implementation team established an action plan outlining the project. Again, this system has been implemented only within the department of customer service in each district office. It has not been implemented throughout the whole organisation. One district office was volunteered to be the pilot project at the first before extending the system to all 14 district offices across the Bangkok Metropolis and nearby provinces. Apart from this, the implementation team planned to perform data collection using standard forms as research

instruments. The standard forms had been established using the details from the job description in order to determine the main activities and cost drivers in advance, and revised to ensure that the implementation team received accurate information that covered all working areas. Moreover, the reliability of the data was one of the topics that the implementation team was concerned with. Due to this factor, the team used triangulation to verify the accuracy of the data, such as by comparing the data from two people doing the same job, or by collecting data over a several months and comparing it later.

In addition, all data was stored on a stand-alone computer system, using Excel to process the outputs. Finally, approximately 120 activities and 55 cost drivers were initially classified, these were then reduced to 44. Moreover, the implementation team needs to perform further data collection to get more accurate data to improve some activities since privatisation has caused changes within the organisation. However, a question arising at this point is of the quality of the data gathered. Some team members confirmed that they had problems with the reliability of the data. Hence, it was possible to say that the output (e.g. identifying the activity, selecting cost drivers) was inaccurate in their opinion.

In addition, MEA is going to be transformed from a Thai State Enterprise into a public company. In relation to this the top management received some advice from their advisors to integrate ABC information from the stand-alone system into a fully integrated system, hence

the implementation team confirmed that they have to collect new data and that some activities may be changed because the organisational structure has been changed.

Besides, two sub-factors were identified as high significance problems, including (1) resistance to new cost accounting system, and (2) increased workload. Therefore, it is important to note that those problems must be seriously considered and given in-depth investigation in order to understand why ABC has not provided as good output as expected. However, there were ten moderate significance problems perceived by eight interviewees, including (1) lack of information resources, (2) lack of staff time, (3) reliable data, (4) too much information from the data collection, (5) privatisation, (6) changes in internal staff, (7) takes up a lot of accountants' time, (8) complexity of business process of the organisation, (9) lack of knowledge about ABC among the staff, and (10) organisational issues. It is important to say that those problems have to be addressed and investigated because it may be that the system did not achieve the objectives partly because of those factors. Surprisingly, there is only one low significance problem perceived by eight interviewees. Hence, it has been categorised at a low significance level and has no significant correlation with the ABC implementation process in this organisation at all.

Moreover, it is possible to classify the stage of ABC implementation at MEA as the "acceptance" stage based on the comments of the interviewees. However, following the

interviewing, the researcher has formed the view that this system has reached the routinisation stage on the grounds that the outcome of the ABC project here has been used as a part of normal activities in the organisation and it is also accepted and used by outsiders for decision-making such as in the case of department of engineering.

Chapter 8

Case Study 3: Electricity Generating Authority of Thailand

*One must learn by doing the thing, for though you think you know it,
you have no certainty, until you try.*
Sophocles

8.1. Introduction

The Electricity Generating Authority of Thailand (EGAT) was established on May 1, 1969 by the promulgation of the Electricity Generating Authority of Thailand Act B.E. 2511 which merged assets and operations of the three previous state enterprises, namely Yanhee Electricity Authority, Lignite Authority and the Northeast Electricity Authority. It presently is a state enterprise under the Ministry of Energy. EGAT is a state owned enterprise responsible for electricity generation and transmission for the whole country. In addition to generation by its own power plants, EGAT also receives electric power from private power sources including both domestic and foreign independent power producers (IPPs) and small power producers (SPPs). Most of the bulk electric energy is sold and transmitted via EGAT's transmission network to two distributing authorities, namely the Metropolitan Electricity Authority (MEA), which delivers electricity to industries, offices and households in their respective areas (EGAT 2006).

EGAT's mission

- To generate, acquire and transmit electric energy to the Metropolitan Electricity Authority (MEA), the Provincial Electricity (PEA), other electric energy consumers under the law and thereon to neighbouring countries.
- To undertake various activities concerning electric energy. Energy sources deriving from natural resources for the production of electric energy and other activities, which will promote the purposes of EGAT.
- To undertake businesses concerning electric energy and other businesses concerning the activities of EGAT, or collaborate with other persons for the said activities.
- To produce and sell lignite, or collaborate with other persons for the said activities.

EGAT's Vision

To be the ASEAN Power Grid centre and the region's leading company in energy and related businesses.

EGAT's Business

1. *Generation:* EGAT presently builds, owns and operates several types and sizes of power plants across the country with a combined installed capacity of 15,000 MW, accounting for about 59 percent of the country's 25,602.8 MW generating capacity.

EGAT also purchases electric power from private power companies and neighbouring countries. To ensure efficient, low cost and environmentally sound production, EGAT's generation is based on diversified fuels with an emphasis on the utilisation of indigenous resources such as natural gas, lignite and hydropower. In addition to its power plant assets, EGAT also owns and operates Mae Moh lignite mine – one of Thailand's largest lignite mines in the north of Thailand to provide coal supply for its mine power station (EGAT 2006)

2. *Transmission:* EGAT develops, owns and operates the national transmission network, which boasts one of the most reliable and efficient networks in the region. Its grid system which covers the entire country mainly operates at 500 kV, 230 kV and 115 kV voltages. EGAT's power system operation is divided into five geographical areas: metropolitan, central, north-eastern, southern and northern regions. From the National Control Center based at EGAT's Headquarters and other five regional control centres, EGAT plans, operates and controls the low cost dispatch of generated power from its power plants as well as from private power plants to load centres via its high voltage transmission lines. EGAT's grid system is presently linked to Laos by 115 kV and 230 kV lines and to Malaysia by 115 kV, 132 kV and the new 300 kV HVDC lines (EGAT 2006).
3. *Energy Sales:* EGAT is obliged to supply and sell virtually all of the energy output from its own generation facilities and from private power sources to two distributing

authorities, namely the Metropolitan Electricity Authority (about 35% of the total supply) and the Provincial Electricity Authority (about 63%), which then deliver electricity to users across the country. EGAT's direct customers also include a small number of large industries prescribed by Royal Decree. Cross-border power trades are also made with Laos and Malaysia (EGAT 2006).

4. *Other Service Businesses:* EGAT has been striving to create added value from its decades of expertise and existing resources. In addition to its mission of providing a quality power supply service countrywide, EGAT has now been offering a variety of energy related services to industrial and business sectors. Its scope of service ranges from engineering, operation and maintenance, construction, survey, testing, chemical to information technology services (EGAT 2006).

Associated companies

Since 1992 EGAT started to form subsidiaries in compliance with the government's privatisation policy in order to increase private sector participation in the electricity supply industry and reduce the investment burden of both EGAT and the government (EGAT 2006).

Two of these subsidiaries are:

- Electricity Generating Public Company Limited (EGCO): Founded on May 12, 1992 as EGAT's wholly owned subsidiary, EGCO is Thailand's first independent power

producer established to set a prototype of privatisation in the electricity generation business. With current paid-up capital of 5,265 million baht, EGCO is structured as a public holding company to invest in subsidiary companies with core business in generating electricity and in other related energy business companies. EGAT currently remains EGCO's major shareholder with approximately 25% stakes.

- Ratchaburi Electricity Generating Holding Public Company Limited (RATCH): RATCH was founded on March 7, 2005 as EGAT's wholly owned subsidiary with registered capital of 300 million baht. RATCH presently is a public holding company with total paid-up capital of 14,500 million baht. The company is primarily focusing on investing in the generation business through its two wholly owned subsidiaries, namely Ratchaburi Electricity Generating Company Limited and Ratchaburi Energy Company Limited. EGAT currently holds about 45% stakes in RATCH.

Environmental and social responsibility

EGAT has been firmly committed to the protection of the environment and people's quality of life. Efforts have been made to minimize environmental impacts caused by its operation and activities. A participatory approach has been adopted to involve community and stakeholders in all steps through its project development to ensure the optimum benefits for the community in the long run. Best practice environmental management system ISO 14001 has been adopted organisation wide to ensure its complete compliance with relevant

environmental legislation and regulatory standards while building up community trust and confidence in EGAT's operation (EGAT 2006).

Operational efficiency and maintenance

The overall net efficiency of EGAT's power facilities declined slightly from the previous year due mainly to the increase in natural gas fired energy generation as a substitute for the costly imported fuel oil. The declining efficiency was also attributed to the higher generation from a lignite-fired power station with lower efficiency to replace EGAT's major gas-fired power plants at Bang Pakong and South Bangkok during their unplanned maintenance outages. Although EGAT had to reduce its own generation, its power plants have maintained a satisfactorily high performance with an output factor of 80% and a comparatively low unplanned outage factor. The high operational performance was attributed to the efficient and proper planning of EGAT's plant operation and maintenance schedules. However, the unplanned outages of hydropower plants increased from the previous year since EGAT had to halt the operation of Pak Munrun-of-the-river dam for 12 months in response to the Cabinet's resolution for the opening of the rolling gates of Pak Mun dam to pave way for studies on the ecosystem of the fishery resources of the Mun River. With new capacities of private power plants being added to the power system during the year, EGAT's generation is expected to be further reduced to about 41% whereas energy purchased from private power plants will rise to 59% of the country's energy requirement this year. This may cause the

average planned outage of EGAT's power plants to remain high over the next year (EGAT 2006).

System reliability

The security of the power supply system is among the ultimate goals of EGAT's operations. This has been achieved through the sound performance of its core operational systems including generation, transmission, dispatch control and energy procurement and supply. According to EGAT's practices, a number of criteria have been set to maintain a specified level of reliability by taking into account the affects of the economy and electricity prices caused by the interruption of electricity supply as well as interruption risks. Among the fundamental security criteria adopted is the single contingency (N-1) criterion, which requires that the power system must be stable and able to tolerate the outage of one large generator or one circuit of the transmission line. Unlike other products, electric energy cannot be stored. Electricity must be generated and transmitted instantaneously to meet the country's diverse needs at all times and under all circumstances. As the system's nerve centre, the National Control Centre located at EGAT headquarters is responsible for controlling and balancing generation with load requirements and for ensuring the dispatch of power from EGAT and private power plants and the transmission of energy in an economical, reliable, least costly, and environmentally sound manner. The National Control

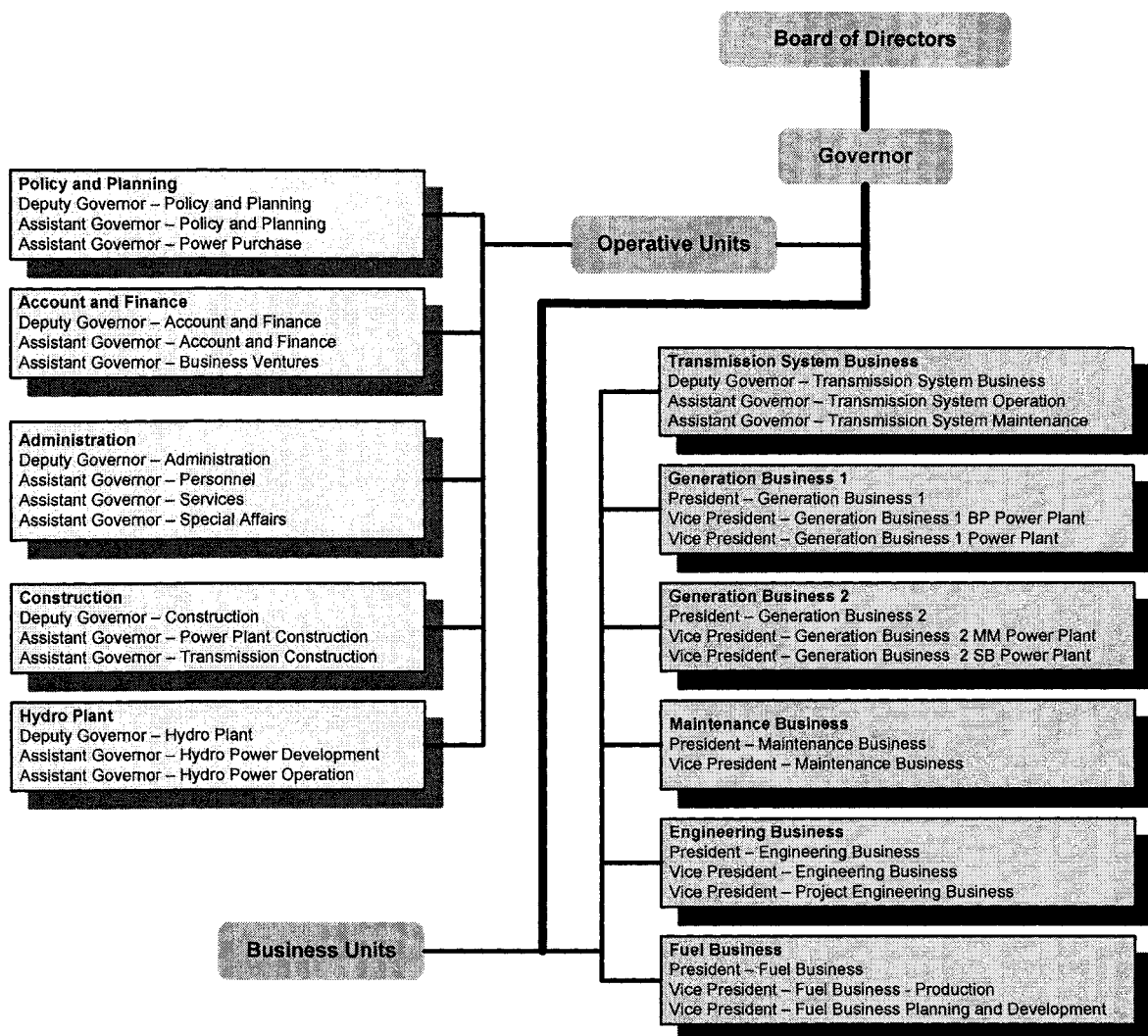
Centre operates in coordination with five regional control centres located in each part of the country by following principle practices including (EGAT 2006):

- To ensure energy generation and transmission meets international environmental quality standards.
- To ensure adequacy and reliability of energy supply.
- To control and ensure the high quality of the electricity service which also meets international standards.
- To ensure the utmost safety of operations for EGAT's people and property.

Energy and tariff

EGAT's customers include two distributing authorities, which account for 98% of its total sales volume, and a small number of industrial customers prescribed by Royal Decree. It also supplies, upon request, standby energy to private power companies in emergencies and during their plant outages. On a cross-border front, energy trading is also carried out with Laos and Malaysia (EGAT 2006).

Figure 8.1 Organisational Chart of EGAT



Source: Annual Report of Electricity Generating Authority of Thailand

8.2. Rationale of the ABC System at EGAT

Over the years, EGAT has steadily implemented restructuring programmes in response to the ongoing reform of the electricity supply industry, which will lead to greater competition especially in the generation business. EGAT engaged two consultants, namely SCB Securities teamed with Kema Consulting, and the Asian Institute of Technology to conduct critical analyses of the electricity supply industry reform options for Thailand and to recommend an appropriate plan for the power sector's reform and privatisation. Meanwhile, EGAT also set up a working group to study the industry reform. The studies were aimed to arrive at the right reform model in the best interest of the people: allowing greater competition in the power sector and more choices for the people; preventing monopoly while taking into consideration assistance to low income users, rural electrification and enhancement of relationships with neighbouring countries.

In an effort to improve the quality and efficiency of its operations, EGAT has adopted a variety of quality management systems. Such standardised quality management tools as the ISO 9000 quality management system, ISO 14001 environmental management system, health and safety management, and loss control management have been implemented organisation wide, as well as an activity-based costing system.

8.3. Profile of Interviewees at EGAT

Table 8.1 gives the profiles of the interviewees with whom the researcher conducted interviews at EGAT. The details are shown as follows:

Table 8.1 Profile of Interviewees at EGAT

Interviewee	Position in Organisation	Involvement with ABC	Educational Background	No. Of years at EGAT
EGAT/CEO	Vice President - Finance	Chief Executive	MSc. (Accounting)	38
EGAT/DOA	Director of Accounting Department	Director of Accounting	MSc. (Accounting)	26
EGAT/PCO	Head of Cost Accounting Division	Project Coordinator	BBA. (Accounting)	30
EGAT/TM1	Senior Accountant	Implementation team	BBA. (Accounting)	32
EGAT/TM2	Senior Accountant	Implementation team	BBA. (Accounting)	30
EGAT/TM3	Senior Accountant	Implementation team	BBA. (Accounting)	29
EGAT/TM4	Senior Accountant	Implementation team	BBA. (Accounting)	28
EGAT/USER	Director of Service Department	User	MSc. (Accounting)	20

Note: Data drawn from face-to-face interviews

8.4. Research Findings

To form conclusions through the optimal utilisation of the data collected, the data analysis was conducted using both statistical and descriptive methods. After each interview the interview data were transcribed and notes prepared, being translated from Thai into English. In terms of statistical analysis, the data was coded and extracted from the transcripts to produce a *“thinking unit framework”* in spreadsheet format, for the *“content analysis”*

procedure. From this, the most important factors in ABC implementation at EGAT could be identified, which is the main purpose of this research. The descriptive analysis and findings from the interviews are discussed below. However, a measure of reliability of the data is a seriously concern, so it was decided to apply the “*triangulation method*” as mentioned in Chapter 5 (Research Methodology). Finally, the data analysis and the findings are shown as follows:

8.4.1. Demography

Eight employees of this organisation were interviewed. These consisted of three employees at management level, namely CEO, DOA and USER and five employees at operational level, namely PCO, TM1, TM2, TM3 and TM4, as shown in Table 8.1. The information in Table 8.2 shows the characteristics of the interviewees as follows:

Table 8.2 Characteristics of the interviewees

Characteristics	Categories	Number (N = 8)	Percentage (%)
Gender	Female	6	75.00
	Male	2	25.00
	Total	8	100.00
Educational background	Lower than bachelor degree	0	00.00
	Bachelor degree	7	87.50
	Master degree/ PhD	1	12.50
	Total	8	100.00
Qualification type	Accounting/ Finance	7	87.50
	Other	1	12.50
	Total	8	100.00
Country of graduation	Thailand	8	100.00
	Overseas	0	00.00
	Total	8	100.00
Number of years at EGAT	Less than 5 years	0	00.00
	5-10 years	0	00.00
	11-20 years	0	00.00
	More than 20 years	8	100.00
	Total	8	100.00
Work experience in variety department within the organisation	Work experience in variety of departments	8	100.00
	No work experience in variety of departments	0	00.00
	Total	8	100.00
Foreign work experience/training	No foreign work experience/training	6	75.00
	Foreign work experience/training	2	25.00
	Total	8	100.00
Knowledge of ABC before implementing ABC in the organisation	Excellent	0	00.00
	Good	0	00.00
	Adequate	0	00.00
	Less than adequate	1	12.50
	No knowledge of ABC at all	7	87.50
	Total	8	100.00

Note: Data drawn from face-to-face interviews

8.4.2. Determining factors

Data were drawn from five interviewees. They consisted of two employees at management level, namely CEO, and USER, and three employees at operational level, namely PCO, TM1, and TM2, as shown in Table 8.1 and 8.2. Content analysis was used in order to identify the most important factors in ABC implementation at EGAT. Twenty-four sub-factors were

found. Table 8.3 summarises the sub-factors raised by the eight interviewees who were actually implementing ABC.

Table 8.3: Twenty-four sub-factors in implementing ABC raised by the eight interviewees

	Number of Interviewees (%)
1. Lack of knowledge and training about ABC	100.00%
2. External consultant	87.50%
3. Commercial software selected	87.50%
4. ABC Project Committee	87.50%
5. Level of progress of ABC implementation	87.50%
6. Activities and cost drivers determined	87.50%
7. Increased workload	87.50%
8. Time-consuming	87.50%
9. Organisational issues	75.00%
10. Complexity of the business process	75.00%
11. Increased accuracy of cost of produce	75.00%
12. Privatisation	75.00%
13. Resistance to new cost accounting system	75.00%
14. ABC implementation led to some developments in other inter department	62.50%
15. Providing knowledge about ABC systems	62.50%
16. Provided seminar and training adequately and continuously	62.50%
17. Lack of staff time (none of the team worked full-time on ABC project)	62.50%
18. Utility benefits of ABC output	62.50%
19. For planning, controlling, and decision-making	50.00%
20. Poor quality of information	50.00%
21. Improving effectiveness and performance in the organisation	37.50%

22. Data collection using standard forms	37.50%
23. Keeping ABC information up-to-date	37.50%
24. Reliable data	37.50%

Remark: The number of interviewees is shown in percentages as follows:

Number of Interviewees (n = 8 = 100.00%)

Number of Interviewees (n = 7 = 87.50%)

Number of Interviewees (n = 6 = 75.00%)

Number of Interviewees (n = 5 = 62.50%)

Number of Interviewees (n = 4 = 50.00%)

Number of Interviewees (n = 3 = 37.50%)

Number of Interviewees (n = 2 = 25.00%)

Number of Interviewees (n = 1 = 12.50%)

As shown in Table 8.3, these sub-functions were mapped out in order to group them together. It is apparent that twenty-four could be manipulated into nine main factors. However, it is important to note that the researcher's own judgment was used in classifying the sub-factors into various kinds of main factors. The results are shown in Table 8.4.

Table 8.4 Twenty-four sub-factors could be manipulated into nine main factors

1. Top management support
2. Computer systems
3. Education and training
4. ABC team

5. Objectives of ABC implementation
6. ABC implementation process
7. Benefits of ABC implementation
8. Problems with ABC implementation
9. Level of the progress of ABC implementation

8.5. Discussion and Conclusions

Of the eight employees interviewed, different individuals had somewhat different perceptions. The analysis of the case study data has indicated that thirty-three sub-factors and nine main factors can be identified as shown in Table 8.3 and 8.4. The findings are discussed below.

8.5.1. Main Factor 1: Top management support

This main factor “top management supports” is the most important matter as any new system cannot be successfully implemented in an organisation without the wholehearted support of the top management. Therefore, top management support is seen as the most important factor influencing the success or failure of any new system in an organisation (IMA 1993). A lot of preceding research has reported that an essential and key factor influencing success in implementing ABC is top management support (Shield 1996). It is apparent that the EGAT staff interviewed perceived that those factors were very important to the successful implementation of ABC in this organisation. The interviewees had varying ideas about those factors; three sub-factors have been identified to support this main factor as follows:

8.5.1.1. External consultant (Sub-factor No. 2)

Seven interviewees (87.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). From the interviewing there are two points to note, first of all EGAT hired an external consultant from the well-known consultant company; named, “Price Waterhouse Coopers (Singapore)” to handle this project. Second, computer software, named “WALKER”, was chosen to support the computer system in this organisation. One critical point perceived by the four interviewees at operational level concerned the ability and skill of the staff from the consultant company in terms of their handling of the ABC project at EGAT – it seems that the staff from the consultant company did not pay enough attention to this project and also they did not understand their client’s business, therefore their lack of experience could not help EGAT resolve some of the problems experienced in the implementation of the ABC system. Several interviewees, for example said that,

Interviewee (CEO): We decided to hire the consultant to develop the financial management systems for us. The consultant company offered two types of computer software for our selection. They were SAP and WALKER. Finally, the committee selected the WALKER software to support the financial management systems, and the ABC system was one part of this financial management system.

Interviewee (DOA): For the ABC project, we hired a professor from a Thai famous university to run the seminar and training project here at our training centre.

Interviewee (PCO): EGAT hired Price Waterhouse Coopers as the external consultant, who recommended the WALKER software to the top management for our financial management system.

Interviewee (TM1): We hired Price Waterhouse Coopers to develop our management system, using WALKER software to support our computer systems.

Interviewee (TM2): EGAT hired Price Waterhouse Coopers to look after this project, all the external consultants came from Singapore and we had to speak in English with

them; no one was Thai. I felt that the external consultant was not good enough to handle this project. Most of the job had been done by our staff, and the external consultants didn't pay much attention to this project.

Interviewee (TM3): We hired the external consultant to implement the ABC system for us. EGAT wasted money, indeed. The external consultant didn't understand our business, and so, they were useless for this project.

Interviewee (TM4): The external consultant was not good enough because they had no idea about our business. They should have more experience about ABC systems altogether. Sometimes, they could not sort out problems for our organisation.

8.5.1.2. Provided seminar and training adequately and continuously (Sub-factor No. 19)

Five interviewees (62.50% of the participants) raised this sub-factor, including one interviewee at management level (DOA) and four interviewees at operational level (PCO, TM2, TM3 and TM4). In general, providing new knowledge for employees in the organisation is the responsibility of top management. Besides this, improving employee understanding is one of the main factors in improved effectiveness in the company. Another significant part of a successful implementation of ABC is training (Compton 1996). Apparently, the findings showed that this organisation provides seminars and training continuously to develop their employees, as the policy here is to refresh their knowledge both with in-house training and external training. For example, training includes how to use new computer software, gaining knowledge about activity-based management, activity-based budgeting and the balanced scorecard. Therefore, based on this finding, it is possible to note that EGAT has provided sufficient seminars and training for their employees on a continuous basis. The interviewees, for example said that,

Interviewee (DOA): EGAT provided training and seminars for the employees regularly, and continuously, ABC was one of the topics as well. I remembered that for the ABC topic, it was in-house training only.

Interviewee (PCO): Our employees received training about how to use this computer software, it was in-house training sometimes. Nowadays, we are talking about ABM and also the balanced scorecard. Our employees have got the chance to attend seminars about those topics from time to time.

Interviewee (TM2): EGAT supports our employees to refresh their knowledge all the time, both in-house training and outside. It depends on them to select training for themselves.

Interviewee (TM3): Indeed, the attendees come from two parts of the organisation; it was the accountants from each department. EGAT has many departments in each business unit, so they have got their own accountants, so, those accountants were the attendee. So, it don't mean most of the employees had a chance to attend this seminar.

Interviewee (TM4): EGAT provided seminars and training continuously to develop our employees, as is the policy here.

8.5.1.3. Providing knowledge about ABC systems (Sub-factor No. 17)

Five interviewees (62.50% of the participants) raised this sub-factor. Again, it is one interviewee at management level (DOA), and four interviewees at operational level (PCO, TM1, TM2 and TM3). Surprisingly, the findings indicated that even though EGAT provided sufficient seminars and training on an ongoing basis, in terms of knowledge about ABC systems, EGAT did not provide enough knowledge for the staff who was involved in this project. According to this circumstance, it can be stated that lack of knowledge about the ABC system was present in this organisation. The interviewees, for example said that,

Interviewee (DOA): Yes, we have provided them with seminars about ABC, but in my opinion, it's not enough. It was too little and indeed it was just telling them how to determine the activities. That's it.

Interviewee (PCO): I didn't understand this system at the first time. After I went to the seminar about ABC, it seemed I could understand the concept much better.

Interviewee (TM1): We started to organize the seminar about the ABC system for our employees; it was in-house training at that time. It was very often. We did it so many times to make sure that our employees could understand about the new systems, it was ten times.

Interviewee (TM2): We managed the seminar about the ABC system for our employees in two stages, the first stage for the ABC committee, and another stage was for the accountants from all departments in our organisation.

Interviewee (TM3): It's a few times for the ABC system. It's not enough.

From the finding above (Section 8.5.1, 8.5.1.1, 8.5.1.2, and 8.5.1.3), the results showed that there are a few main points to be considered.

Firstly, concerning the external consultant, it is apparent that even though EGAT hired a well-known consultant company (Price Waterhouse Coopers) and selected special computer software (WALKER) to implement the ABC system in their organisation, it seems that the ability and skill of the staff among the consultant company was one of the difficulties perceived in this organisation. Therefore it is possible to indicate that the lack of the consultants' experience should be regarded as one of the main factors that have to be considered.

Secondly, education about the ABC system for the staff involved (EGAT's staff) was provided through seminars and training for their employees, however from the interviews, a strong impression emerged that they accepted that it was not sufficient to support them to do

the best job possible in this project. Hence, it is possible to indicate that lack of knowledge was a factor present and should be one of the main factors to be further considered.

It is possible to conclude that the top management support factor was not full support because most of the interviewees insisted that there were some difficulties relating to consultants' lack of experience and knowledge of ABC. These are the main important factors which need to be addressed at this organisation.

8.5.2. Main Factor 2: Computer Systems

Sub-factor No. 3, is identified in this area which will be discussed. It is about the computer systems in the organisation, in the area of the computer software:

8.5.2.1. Commercial software selected (Sub-factor No. 3)

Seven interviewees (87.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). Obviously, the findings showed that EGAT bought special software named "WALKER" to support the whole management system in this organisation, with the ABC system one part of this. There are no reports about difficulties experienced with the computer software. In actual fact, it seems to have been convenient for the EGAT's staff to use this software. The interviewees, for example, said that,

Interviewee (CEO): After we hired the external consultant, WALKER computer software was selected to support the financial management system here.

Interviewee (DOA): It's very convenient for us since EGAT bought the software WALKER to support our financial management system, it supported the ABC system as well. We have never used a stand-alone system for the financial and accounting system here.

Interviewee (PCO): EGAT bought special software, as recommended by the consultant company. It's WALKER, this program has been used to support all the financial management system here, including the ABC system. Our computer systems are an online system, with an intranet to support the information throughout the whole organisation.

Interviewee (TM1): We selected WALKER, because, this software could support both our budgeting system and the ABC system by using the same data.

Interviewee (TM2): The top management decided to buy WALKER software because this software could support all the financial system including ABC, ABM and ABB. It is perfect for EGAT.

Interviewee (TM3): EGAT decided to buy special software to support the financial management system.

Interviewee (TM4): EGAT selected special software to support the financial management system.

Finding above (Section 8.5.2.1) the computer systems are not a significant factor leading to the success or failure of the ABC implementation in this organisation at all; in contrast, the employees appreciate using this new software as recommended by the consultant company.

8.5.3. Main Factor 3: Education and Training

There are two sub-factors classified to support this area. The first is about providing training adequately and continuously (Sub-factor No. 19), as identified by five interviewees (62.50%), including one interviewee at management level (DOA) and four interviewees at operational level (PCO, TM2, TM3 and TM4), and secondly, providing knowledge about the

ABC system as identified by five interviewees (62.50% of the participants), including one interviewee at management level (DOA) and four interviewees at operation level (PCO, TM1, TM2 and TM3). This has already been discussed in Section 8.5.1.2, and 8.5.1.3, and the results show that even though they provide seminars and training for their employees frequently, however in terms of the seminars about ABC system they accepted that these were not sufficient to support the staff in doing their jobs in this project. Hence, it is possible to indicate that lack of knowledge about the ABC system was apparent and should be one of the main factors to be considered by the organisation.

8.5.4. Main Factor 4: ABC team

One sub-factor was identified to support this topic. It is the sub-factor number 5, “ABC Project Committee”. This committee was selected from the heads of all the business units and heads of the power plants within the organisation. The committee has the responsibility to determine the main activities and select the cost drivers that EGAT should have. Besides this, they established a sub-committee to directly support this project. This sub-committee has the responsibility for finding out and providing information and evidence to the ABC project committee to identify the main activities and select cost drivers. Most of the sub-committee members were selected from the accountants in each department (EGAT has divided their organisation into business units and power plants, each of which has its own department of accounting). Obviously, it clear that the sub-committee has got a very good

background education and level of work experience in accounting, and also they have been working in the department of accounting for many years (see Table 8.1 and 8.2). Besides this, the sub-committee worked as the implementation team because this sub-committee had the responsibility to design the standard forms as the instrument for collecting data and so on. On the other hand, the ABC committee determines and makes decisions about activities and cost drivers, based on the information provided by the sub-committee. It is possible to note that if the researcher merges the two committees together it is apparent that these committees comprise representatives from varied departments within the organisation, as is the recommended arrangement suggested in prior ABC research (e.g. Cooper, 1990; O'Guin, 1991; Grieco, 1995) whereby the implementation team should be a multidisciplinary team.

Seven interviewees (87.50% of the participants) raised this sub-factor, including, two interviewees at management level (CEO and DOA) and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). Several interviewees, for example said that,

Interviewee (CEO): We established the committee for the ABC project by selecting internal staff from different departments; no external consultants were involved at this point. The committee was the head of each division. The main job of the committee was to identify and determine the main activities for EGAT in the first place, and the committee decided to implement them across the whole organisation at the same time.

Interviewee (DOA): EGAT established the ABC committee for this project, the heads of each department made up the committee at first, and the objective of this committee was to determine all the activities that EGAT should have. This committee was responsible for establishing a sub-committee to support this project. The sub-committee was from every division in EGAT; you can imagine how big the ABC project is here. It looked like we tried to classify all the activities in every single

division and department at that time. Most of the sub-committee was made up of staff in the department of accounting only.

Interviewee (PCO): I was on the ABC committee at that time. I had to attend meetings so many times for this project. All the committee convened for meetings regularly, I remember that it took place every month at least.

Interviewee (TM1): For this project, we established a committee to handle it, all the committee came from the heads of each department, and their responsibility was to determine all the activities that EGAT should include at first. The committee held meetings very often. My boss brought the activity dictionary to the committee to use as a guideline to identify activities.

Interviewee (TM2): I was one of the ABC committee members at that time; my responsibility was to organize the meetings for this committee. We decided to implant this system in the whole organisation at the same time.

Interviewee (TM3): I was one of the ABC committee members; my responsibility was to identify the activities for the power plant, as the department that I worked for.

Interviewee (TM4): I was not in the ABC committee at that time, but the head of the department that I worked for was one of the committee members. So, I had to go with my boss as her secretary and I worked in the sub-committee for this project.

It seems that this organisation does understand the criteria that have been addressed in prior ABC research (e.g. Cooper, 1990; O'Guin, 1991; Grieco, 1995). It is constructive to point out however, that both the ABC project committee and the sub-committee should be a multidisciplinary team. Concerning the implementation team, this may not be one of the main important factors that the organisation has to be concerned with.

At this point, from the findings and discussion in Section 8.5.1, 8.5.2, 8.5.3, and 8.5.4; it can be concluded that:

- ✓ The top management support factor was not full support because there were some difficulties that arose, particularly, the consultants' lack of experience and the staff's lack of knowledge about ABC (as discussed in Section 8.5.1)
- ✓ The computer systems are not a problem leading to the success or failure of the ABC implementation in this organisation at all. On the contrary, the employees appreciate using this new software, as recommended by the consultant company (as discussed in Section 8.5.2)
- ✓ The ABC committee and sub-committee has received regular training and attended seminars, however, in terms of seminars about the ABC system, they accepted that the training provision was not sufficient to support them to do a better job in this project (as discussed in Section 8.5.3)
- ✓ The ABC project committee and the sub-committee, both together should be a multidisciplinary team, as required to conduct an ABC project in most cases (as discussed in Section 8.5.4)

8.5.5. Main Factor 5: Objectives of ABC

Obviously, three sub-factors have been identified as the objectives of ABC implementation at EGAT, they include increasing the accuracy of costing of products for use in planning, control and decision-making, and in improving effectiveness and performance in the organisation. As Cooper and Kaplan (1988) stated, the ABC system is not designed to trigger automatic decisions. It is designed to provide more accurate information about production and support activities and product costs so that management can focus its attention on the products and process with the most leverage for increasing profits, and also it helps managers make better decisions about product design, pricing, marketing and mix, along with encouraging continual operational improvements. The interviewees made various statements about these factors as follows:

8.5.5.1. Increased accuracy of costing of products (Sub-factor No. 13)

Six interviewees (75.00% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and four interviewees in the operational level (PCO, TM1, TM2 and TM3). Indeed, the best ABC system in the world will be useless if no one understands how to use its information (IMA 1993); hence, using ABC information is crucial for the company. Therefore, the company needs to identify all unnecessary costs by using ABC information in every single department in order to eliminate them as far as they can. It may be a significant way to approach the accurate costing of each product (Cooper

1991). The findings show that one of the main objectives of the ABC implementation at EGAT is to move toward the accurate costing of products, because a clear picture of the cost of products can be utilised for planning, control and so on. The interviewees, for example, said that,

Interviewee (CEO): The current accounting systems could not provide the accurate costs of products, so ABC should be the answer to demonstrating a clear picture of the cost accounting system here.

Interviewee (DOA): We tried to determine the main activities carefully in order to reflect the cost of each activity that finally leads to the accurate cost of products.

Interviewee (PCO): I think that the costing of products is a lot better at the moment.

Interviewee (TM1): I am quite sure that the ABC information could provide accurate costing of produce as the main benefit from this system.

Interviewee (TM2): The ABC information could reflect the accurate cost of products much better.

Interviewee (TM3): The top management would like to employ this project to improve the accuracy of product costing.

8.5.5.2. For planning, controlling and decision-making (Sub-factor No. 1)

Four interviewees (50.00% of the participants) raised this sub-factor. Two interviewees at management level (CEO and USER) and two interviewees at operational level (TM1 and TM3) mentioned that the company decided to implement an ABC system for the purpose of planning, control and decision-making. Cooper (1988) mentioned that even though a company may have a very good planning strategy it does not mean the company is going to achieve its goals. The company needs to be careful about all the information used for the purposes of planning, as Cooper and Kaplan (1988) stated that bad information on product costs lead to bad planning and competitive strategy. In addition, O'Guin (1991) notes that the

ABC system is important for cost estimating. The products are one of a kind, therefore profits depend on how well the company estimates costs. The ABC system was developed to understand and control indirect cost. It tells the management team what triggers cost and how to manage them. It is the first true cost management system. Apart from this, it is possible to mention that ABC implementation at EGAT has been used to serve those purposes. The interviewees, for example, said that,

Interviewee (CEO): We had a problem with the management reports for many years, so we needed a good system for planning, control and decision making. In the past, it took time to get any financial reports and also was very slow. The management agreed to develop the management systems to get rid of those problems. It's indeed the top management's policy.

Interviewee (USER): Finally, I found that I could get a clear picture about expenditure in my department and tried to concentrate on it to reduce it as much as I could. I realised that ABC information is useful for my power plant.

Interviewee (TM1): In the past, our accounting report couldn't support the information for the decision-making, so they decided to implement the new systems including the ABC system as well, in order to utilize that information for the controlling, budgeting, and so on.

Interviewee (TM3): It was for the control system, budgeting system in this organisation.

8.5.5.3. Improving effectiveness and performance in the organisation (Sub-factor No. 4)

Three interviewees (37.50% of the participants) raised this sub-factor. Two interviewees at management level (CEO and DOA) and one interviewee at operational level (TM1) had the same suggestion about this factor – clearly, it is a policy from the top management. Indeed, they realised that competitiveness was critical, particularly in the manufacturing section.

Roztocki, Valenzuela, Porter, Monk, and Needy (2001) have all cited how manufacturing firms face ever-increasing competition in today's global marketplace. Companies must react quickly and manufacture high quality, low cost products to be successful in the new environment (Roztocki 2001). Apart from this, it is positive to believe that the ABC system could help their organisation to develop and improve efficiency, in order to prepare themselves for the highly competitive environment of the future. The interviewees, for example, said that,

Interviewee (CEO): It was a policy from the top management. This project was to improve the whole accounting system at EGAT, in order to improve effectiveness and performance in the organisation to support the management.

Interviewee (DOA): The top management expected to extend the ABC information to the ABM and ABB in the future. It was a policy from the board of directors at that time.

Interviewee (TM1): EGAT tried to develop and improve our business by using new technology to support our management strategy, ABC is the one, and we will extend it to ABM and ABB at the final stage.

At this point, therefore, from the above findings and discussion (Section 8.5.5.1, 8.5.5.2, and 8.5.5.3), the original objectives of the ABC project at EGAT are to:

- ✓ Increase accuracy of cost of product
- ✓ For planning, control and decision-making
- ✓ Improve effectiveness and performance in the organisation

8.5.6. Main Factor 6: ABC Implementation Process

Eight sub-factors have been identified to support this area. The EGAT staff interviewed perceived that those sub-factors were involved in the implementation of ABC in their organisation. Therefore, this will be presented as a whole process (step by step) from the beginning until the end of the implementation process. However, there are four sub-factors that have been discussed in prior sections such as external consultant (Sub-factor No. 2), see Section 8.5.1.1, commercial software selected (Sub-factor No. 3), see section 8.5.2.1, ABC Project Committee (Sub-factor No. 5), see section 8.5.4, and providing knowledge about ABC system (Sub-factor No. 17), see section 8.5.1.3. Apart from this, there are four more sub-factors to be discussed in this section. The interviewees had varying perceptions about those factors as follows:

8.5.6.1. Data Collection using standard forms (Sub-factor No. 22)

Three interviewees (37.50% of the participants) raised this sub-factor. Most of them are interviewees at operational level (PCO, TM1 and TM2). They mentioned that the implementation team decided to use standard forms as the instrument for the data collection procedure in this organisation. The interviewees, for example said that,

Interviewee (PCO): The committee decided to prepare the standard forms for data collection, as developed from the activity dictionary that we brought as guidelines to determine the activities.

Interviewee (TM1): I do remember that we designed standard forms to collect data.

Interviewee (TM2): The standard forms were designed for data collection here.

8.5.6.2. Activities and cost drivers determined (Sub-factor No. 7)

Seven interviewees (87.50% of the participants) raised this sub-factor. Two interviewees at management level (CEO and DOA), and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). There is a clear picture that EGAT adopted their own methods with which to implement the ABC system in terms of identifying the activities and cost drivers. Again, interestingly, the top management used an “activity dictionary” as a guideline to determine main activities and select cost drivers (selected from the power section in the activity dictionary). Obviously, the finding shows that the ABC project committee found that a large number of activities have been classified; it was approximately 2-3000 activities at first, however those activities were condensed into what are currently 1020 activities. Not surprisingly, because EGAT is a big organisation and involved with many business processes, it is possible to have a huge number of activities. The interviewees, for example said that,

Interviewee (CEO): We bought the activity dictionary, using it as the framework to determine the activities and cost drivers. Our business was in the section “Power Sector”. The committee tried to adapt the activities to make sure that those activities were suited for EGAT. EGAT used this book as the guideline for the implementation at the first step.

Interviewee (DOA): Too many activities have been classified because they tried to determine more and more to cover all the areas of the jobs in each division and department at the first place. The committee tried very hard to organize, classify and reduce some activities in order to determine the main activities for EGAT. We had more than 1000 activities at that time.

Interviewee (PCO): EGAT applied the activity dictionary as the guideline to determine the main activities here. The committee identified approximately 2000 activities at the first attempt and now has reduced this to 1020 activities at the present time. I felt anxious because a huge number of activities had been classified,

so I had to talk to many employees to make them clear about those activities and tried to manipulate them as much as I could.

Interviewee (TM1): Unbelievable, you know we could classify more than 2000 activities at the first step of this project; our report about this was very thick indeed. I realised that EGAT is a big organisation and involved with many business processes, so it is possible to have a huge number of activities.

Interviewee (TM2): It was 2-3000 activities; finally, we tried to select the main activities and grouped, mapped those activities. It is approximately 1000 activities or something now.

Interviewee (TM3): It was 2000 activities that had been identified at that time. The committee tried to reduce them as much as they could to get to the main activities; it took time to do this job.

Interviewee (TM4): 2000 activities have been identified from the data collection across the organisation. You can imagine the huge amount of information from the 30000 employees in this organisation.

8.5.6.3. Reliable data (Sub-factors No. 25)

Three interviewees (37.50% of the participants) raised this sub-factor, namely, three interviewees at operational level (PCO, TM1 and TM2). Cooper (1990) stated that the premise for using a new ABC system should be that it is better to be approximately right than exactly wrong. The implementation team had to concentrate on the data they collected. It was not easy to classify a huge amount of data; the team had to work very hard to manage it. Finally, the implementation team spent a lot of time checking the accuracy of the data, by comparing it with the same jobs done in different department; it was necessary to recheck data against other resources such as job descriptions and so on. The implementation team has to make sure that the data is accurate and good enough for the next step of the project. The interviewees, for example said,

Interviewee (PCO): We needed to check the information from the standard forms to make sure that they were accurate. We found that some information was impossible; we had to talk to them directly very often in this case.

Interviewee (TM1): Some heads of divisions or departments refused to support this project, so some information needed to be revised and rechecked all the time. It became a boring piece of work.

Interviewee (TM2): Honestly, I wish EGAT could go back to the first stage of the implementation process and concentrate in-depth on the information and classify the activities again. I am not sure about the accuracy of the current information.

8.5.6.4. Keeping ABC information up-to-date (sub-factor No. 23)

Three interviewees (37.50% of the participants) raised this sub-factor, including three interviewees at operational level (PCO, TM1 and TM2). It was found that the implementation team needs to keep collecting data with the purpose of rechecking data to make sure that the information covers all of the areas of work in each division and department. It needs to be updated from time to time to make sure that the team could have adequate information to improve the effectiveness of the ABC information. The interviewees, for example said that,

Interviewee (PCO): The activity was not stable; the team had to increase or reduce some activities very often at that time to make sure that they covered all areas of the jobs. After that we needed to talk seriously with our employees to make sure that activities covered all areas; we had to revise them later.

Interviewee (TM1): Our organisation has been modified the organisation structure a few times, it involves 30,000 employees here. We have to keep updating information all the time to improve some activities. This project has never been finished in my opinion.

Interviewee (TM2): The activities have been updated critically two to three times.

At this point, from the findings and discussion in Section 8.5.6, 8.5.6.1, 8.5.6.2, 8.5.6.3, and 8.5.6.4, it can be concluded at this stage that:

- ✓ EGAT hired a well-known consulting company (Price Waterhouse Coopers) in Singapore to handle the ABC project, and selected commercial software (WALKER) to support the ABC system.
- ✓ The activities and the cost drivers were identified by using an “activity dictionary” as a guideline. Approximately 2000-3000 activities were recorded which was reduced to 1020 activities.
- ✓ The implementation team carried out data collection using standard forms as the instruments. The reliability of the data was one of the topics that the team was concerned about; therefore they used triangulation to verify the validity of the data.
- ✓ The implementation team needs to keep up-to-date data to get more accurate information to improve the efficiency of the ABC information from time to time.

8.5.7. Main Factor 7: Benefits of ABC Implementation

Five sub-factors were identified as the benefits of ABC implementation at EGAT. Obviously, three sub-factors have been discussed already namely, SF13: Increased accuracy of costing of products (see Section 8.5.5.1), SF01: For planning, control and decision-making (see

Section 8.5.5.2), and SF04: Improving effectiveness and performance in the organisation (see Section 8.5.5.3). There are two more sub-factors to be discussed as follows:

8.5.7.1. ABC implementation led to other developments in internal departments (Sub-factor No. 11)

Obviously, the findings show that some benefits have been found after the company has been implemented the ABC system. This is the same as Innes and Mitchell (1996) have reported; indeed ABC systems have received support because it is perceived that they will have a beneficial behavioural effect on decision-makers and that providing more accurate information will change decisions to the benefit of the firm (Innes 1996). Five interviewees (62.50% of the participants), including one interviewee at management level (CEO) and four interviewees at operational level (PCO, TM1, TM2 and TM3) raised six sub-factors concerning this area (the benefits of ABC implementation). It is apparent that some departments in this organisation used ABC information as a significant channel leading to improved performance in their departments such as in cost control and budget systems. The interviewees, for example said,

Interviewee (CEO): It became clear that some departments here used ABC information to develop and improve their department, and concern with costs occurred in their departments. Interviewee (PCO): Some departments requested ABC information from us, but it seemed that they were not happy about that information. Some of them argued that some activities were not clear or that they were impossible, however, finally we found later that they used ABC information for their cost control.

Interviewee (TM1): We found that some departments were very interested in ABC information, and tried to apply it in their planning, to control their budget etc. It is a good development in some departments.

Interviewee (TM2): A few departments tried to understand the ABC information and use it for cost control in their department.

Interviewee (TM3): Some departments used this information for their department to reduce unnecessary costs.

8.5.7.2. Utility benefits of ABC output: (Sub-factor No. 21)

Interestingly, one interviewee at operational level (PCO) raised this sub-factor. This interviewee said that “ABC information provided more accurate information about the structure of costs in the organisation for the top management”. Hence, it is important to note that this is one of the unexpected benefits that EGAT has gained from the output of ABC implementation.

At this point, according to the findings and discussion above in Section 8.5.7, 8.5.7.1 and 8.5.7.2, six sub-factors were identified and supported this main factor. Obviously, the main results indicated that after an ABC system was implemented at EGAT, the benefits from the ABC implementation proved to be;

- ✓ Increased accuracy of cost of product
- ✓ Better planning, controlling, and decision-making
- ✓ Utility benefits of ABC output
- ✓ ABC implementation leading to other developments in internal departments
- ✓ Improved effectiveness and performance in the organisation

8.5.8. Main Factor 8: Problems of ABC Implementation

Interestingly, these are the sub-factors that are influencing or associated with the ABC implementation in this organisation. The finding showed that ten sub-factors were recognised as the problems of ABC implementation at EGAT. These problems were raised by interviewees who were involved with the ABC implementation in the organisation. Again, it is important to state that the researcher asked the interviewees “what problems do you foresee with ABC” and did not attempt to influence the interviewees. This meant that in the findings in this topic the researcher has used his own judgment in classifying the interviewees’ answers into various categories based on the number of the interviewees from most to least as follows:

Table 8.5 ABC problems experienced perceived by eight interviewees

	Number of Interviewees
1. Lack of knowledge and training about ABC	8
2. Increased workload	7
3. Time-consuming	7
4. Organisational issues	6
5. Complexity of the business process	6
6. Privatisation	6
7. Resistance to new cost accounting system	6
8. Lack of staff time (none of the team worked full-time on ABC project)	5
9. Poor quality of information	4
10. Reliable data	3

Mainly, therefore, the researcher will categorise these problems into three levels as follows:

- **High Significance Level (HSL):** this means that if the number of participants who perceive this problem is between 6-8, it would be identified as a problem and must be seriously addressed and made subject to in-depth investigation.
- **Moderate Significance Level (MSL):** this means that if a number of the participants, between 3-5, perceive this problem, it should be addressed and investigated.
- **Low Significance Level (LSL):** this means that if the number of participants is less than two people who perceive this problem, it may be recognised this problem has no significant correlation with the ABC implementation process.

High Significance Level (HSL): Table 5 showed that there were seven sub-factors acknowledged as HSL problems, including (1) Lack of knowledge and training about ABC, (2) Increased workload, (3) Time-consuming, (4) Organisational issues, (5) Complexity of the business process, (6) Privatisation, and (7) Resistance to new cost accounting system.

Interestingly, most of the interviewees mentioned “lack of knowledge and training about ABC.” According to the interviewing it is possible to note that this problem occurred to a serious extent in this organisation and directly affected the project output. Moreover, seven interviewees noted other problems including, increased workload, being time-consuming,

organisational issues, the complexity of the business process, privatisation, and resistance to new cost accounting system. Considering this, these problems were raised as difficulties experienced as a result of the ABC implementation at EGAT. It seems that all the problems may be a reflection of the accuracy of the ABC information as it is a tangible output at the end of the project. Apart from this, most of the problems (seven out of ten) which occurred in this organisation have been classified as HSL, therefore it is still uncertain whether EGAT achieved the best results possible from the new system.

Moderate Significance Level (MSL): Table 5 showed that there were two problems at this stage, as perceived by the interviewees, including (1) Lack of staff time (none of the team worked full-time on the ABC project), and (2) Poor quality of information.

It is important to note that all of the problems above were revealed by the implementation team, however, Bruesewitz and Talbott (1997) mentioned that the team in complex organisations should be made up of six people working full-time for ABC projects (Bruesewitz 1997). Obviously, EGAT is a complex organisation and needs full-time staff to handle the project. In contrast, the findings found that “no one worked full-time at this project”. Furthermore, “poor quality of information” has been found as one of the problems also, the team stated that “some information was inaccurate and the ABC system involved a huge amount of data, it took time to classify, group, and so on, indeed, and it took time to

complete this job”. These are the problems perceived and classified as MSL in this organisation.

Low Significance Level (LSL): One problem identified at this level was “Reliable data” as mentioned by three interviewees. Interestingly, the team stated that “some information was inaccurate, some information from the production process was insufficient and inadequate”; the team needs to recheck data again and again in order to make sure that it is sufficient, adequate, and valid enough to be used to support the ABC information.

At this point, shown in Section 8.5.8, and as shown in Table 5, there were ten sub-factors identified as the problems from ABC implementation. Apparently, seven sub-factors have been classified as high significance level problems. It is important to note that those problems must be seriously considered and subjected to in-depth investigation in order to understand why the ABC system has not provided as good output as desired. Moreover, there were two moderate significance level problems perceived by the implementation team. These problems also have to be addressed and investigated because it may be that the system did not achieve its objectives because of them. Furthermore, it is important to note that only one problem has been categorised as a low significance level and this identifies it as a problem with no significant correlation with the ABC implementation process at all.

Finally, it is important to note that 70% of the problems occurring in this organisation are classified as HSL, hence it is possible to state that those problems may have seriously affected the output of the ABC implementation meaning that it could not present as accurate costs of products as expected.

8.5.9. Main Factor 9: Level of progress of ABC implementation

According to the Krumwiede model (1997), six stages of the ABC implementation process, including (1) initiation, (2) adoption, (3) adaptation, (4) acceptance, (5) routinisation, (6) infusion can be identified. Interviewees were asked about the level progress of ABC implementation based on this model. The researcher found that the interviewees had no idea about this model and the researcher had to spend approximately half an hour to explain this model using the same table as shown in Table 8.6 as follows.

Table 8.6 Level of progress of the ABC implementation at EGAT

Stage of the Implementation	Percentage of the progression at each step (100%)	Evaluate by the participants (Total = 100%)							
		CEO	DOA	USER	PCO	TM1	TM2	TM3	TM4
Stage 1: Initiation	16.66%								
Stage 2: Adoption	33.32%								
Stage 3: Adaptation	50.00%								
Stage 4: Acceptation	66.64%		70%	Cannot tell					70%
Stage 5: Routinisation	83.30%								
Stage 6: Infusion	100.00%					90%			

Note: This table has been adapted by the researcher, based on the Krumwiede Model (1997).

At this point, as shown in Table 8.6, it is possible to classify the stage of ABC implementation at EGAT as the “routinisation” stage. However, from the interviews, the researcher has formed the opinion that it should be recorded as at the infusion stage, because this organisation has extended the use of ABC information to activity-based-management (ABM) and also they are going to extend this further to activity-based budgeting (ABB).

8.6. Summary

The results of this case study have obvious implications for ABC implementation at EGAT. The results contribute to the organisation itself, the implementation team and the staff involved in this organisation. The summary of this case study is provided in terms of the ABC implementation at EGAT. Moreover, some suggestions are also provided in this section.

Clearly, the main results indicate that after the ABC system was implemented, it could provide more accurate details of the cost of products and also provide more details about cost information. It is important to state at this point that all the information from the ABC system was used for planning, control and decision-making to improve effectiveness and performance in the organisation. It also led to some developments in other departments.

EGAT began with a particular objective which was to increase the accuracy of the costing of products as one part of the re-engineering process within the organisation. However, it is clear that the ABC system at EGAT has still not achieved this objective because the output of the ABC system has not yet demonstrated the finest output of the project. Under these circumstances the researcher attempts to determine the factors that affect the output of the system. They can be classified as follows:

First, there are two groups of people concerned. This is the implementation team and the staff involved, however, to make it clear, after interviewing, the researcher was confident that the implementation team in this organisation was essentially the ABC Project Committee (the heads of all the business units and head of the power plants) and the Sub-committee (they were the accountants from each business unit and power plant). Therefore it could be assumed that it was a multidisciplinary implementation team as is required to conduct an ABC project in most cases. However, the adequacy of the knowledge base of the implementation team was another issue of some concern. It was apparent that the implementation team had less than sufficient knowledge about ABC at the beginning. After they were selected as part of the implementation team they had to attend seminars on accounting systems, including the ABC system. The implementation team indicated that this was too little to allow them to understand the topic. They had to learn about ABC by themselves, such as by reading. It is possible to say that the implementation team was subject

to a lack of sufficient knowledge about ABC. It is likely, though they received training and attended seminars about ABC system; however it was too brief and was not sufficient for their needs. Indeed, this organisation has employees totalling 30,000. It is important to note one significant factor at this point: EGAT realised that they had to provide seminars because these would be very useful for the implementation team. Besides, all staff would understand what the ABC system is and the benefits it could bring. It is apparent that most of staff in the organisation who attended the training and seminars, mainly heads of divisions or departments from each business unit or power plant still do not understand the ABC system. As a result it is important to note that lack of knowledge about the ABC system must be considered as a major factor affecting ABC implementation in this organisation.

Secondly, there was nothing reported about the capacity of the computer systems in this organisation; the computer software WALKER was selected on the recommendation of the consulting company. However, the implementation team mentioned that the skill and experience of the consultancy staff was unacceptable. On this point, the researcher holds a different view, that even though the skill and experience of the consultant staff was unacceptable it is not fair to conclude that it reflects on the ABC implementation procedure as a whole, because finally, most of the implementation procedure must be executed by internal staff (the implementation team). In contrast, the consultants should be involved in terms of merely monitoring the project. Finally, the researcher has confidence that this factor

should not be a significant problem leading to the failure or success of the ABC implementation in this organisation.

Moreover, the implementation team said that they found more than 3,000 activities at the first stage. After the progress meetings with the ABC project committee, they classified these and determined that there were 1020 activities. In addition, this organisation is going to be transformed from a Thai State Enterprise into a public company and because of this the implementation team confirmed that they have to revise some activities because the organisational structure is in the process of being changed.

Furthermore, twenty-two problems were found in the ABC implementation at EGAT. Seven sub-factors were identified as high significance problems, including (1) Lack of knowledge and training about ABC, (2) Increased workload, (3) Time-consuming, (4) Organisational issues, (5) Complexity of the business process, (6) Privatisation, (7) Resistance to new cost accounting system. It is important to note that these problems must be seriously considered and given in-depth investigation in order to understand why the ABC system has not provided output as good as might have been expected. Additionally, two moderate significance problems were found, including (1) Lack of staff time (none of the team worked full-time on the ABC project), and (2) Poor quality of information. Again, it is important to state that these problems have to be addressed and investigated because it may be that the

system did not achieve the objectives partly because of those factors. Finally, the remaining problem identified as a low significance problem was the reliability of data; this factor has no significant correlation with the ABC implementation process at EGAT.

According to the research findings the support from the top management in this organisation did not amount to the full support that they claimed it did since some insisted that there were limitations for example, providing knowledge about the ABC system. It was seen as the most important factor influencing the success of ABC in this organisation. As much previous research suggests an essential and key factor influencing the success of implementing ABC is top management support. Thus, it can be stated that there are several essential and key factors that might affect the ABC implementation process in this organisation, however, can be suggested that the organisation should consider all of these factors in order to understand why the ABC system has not presented the best possible output at this time.

Finally, using the Krumwiede model (1997) it is straightforward to classify the stage of ABC implementation at EGAT as at the “routinisation” stage. However, following interviews, the researcher believes that the implementation stage should be classified as at the infusion stage because this organisation has now extended its use of ABC information into the activity-based-management (ABM) and they plan to further extend this to activity-based budgeting (ABB) in the future.

Chapter 9

Case Study 4: TOT Corporation (Public) Company Limited

Businessmen go down with their business because they like the old way so well they cannot bring themselves to change ...
Seldom does the cobbler take up with a newfangled way of soling shoes and
seldom does the artisan willingly take up with new methods in his trade.
Henry Ford, My Life and Work, 1922

9.1. Introduction

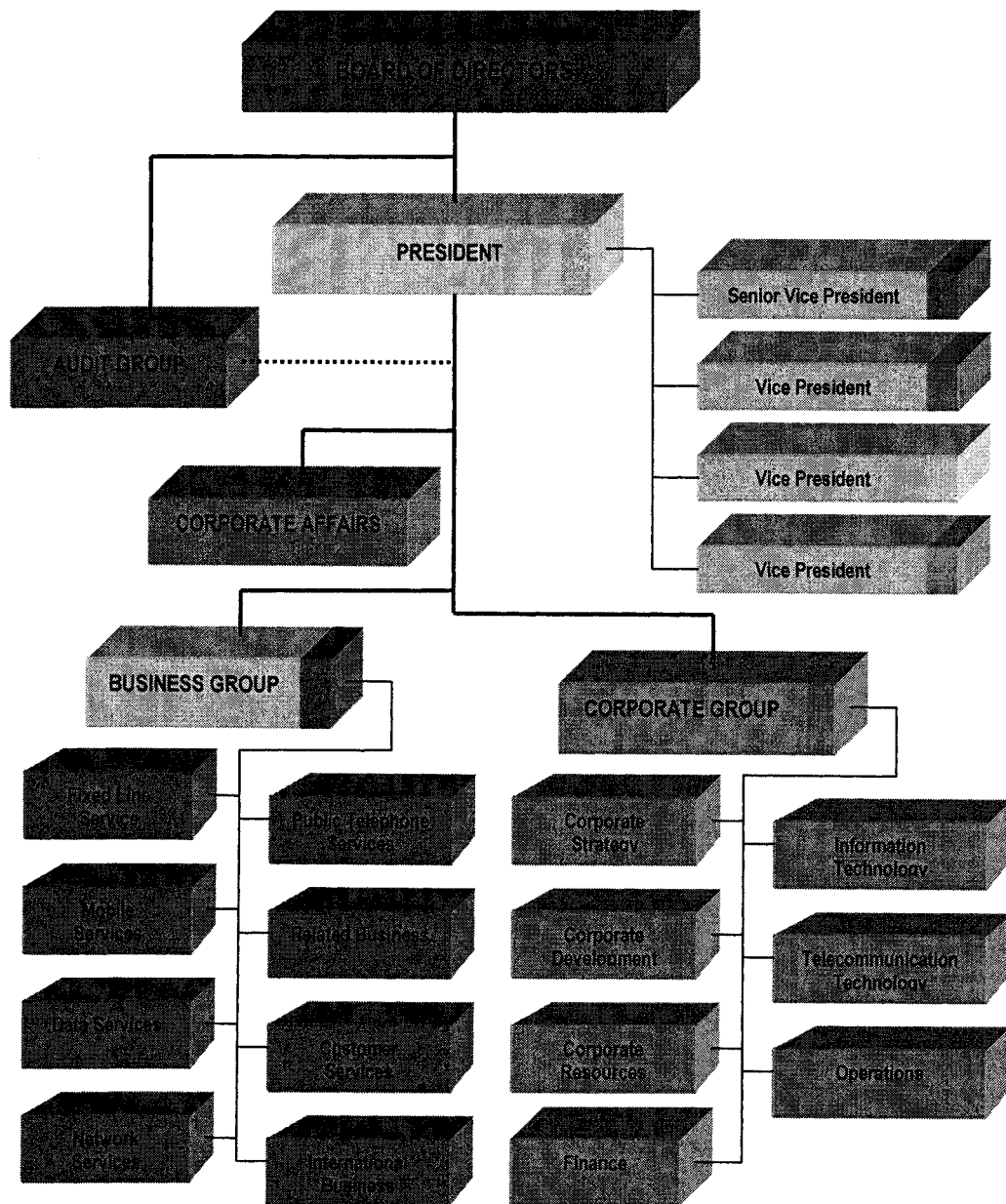
TOT was established on February 24, 1954 in accordance with the Telephone Organisation of Thailand Act, as a state enterprise under the Ministry of Transportation. Currently, TOT provides basic telephone services: local services, domestic long distance services, international services to bordering countries such as Laos, Malaysia, Myanmar and Cambodia, and other related services. TOT gives concessions to the private sector for providing fixed-line telephone services, cellular mobile telephone services, public telephone services, leased line and leased circuit services, and pager service.

Due to an agreement with the World Trade Organisation (WTO) concerning free trade, communications and telecommunication services are now experiencing particularly fierce competition and the government's policy is to improve state enterprises to make them core organisations in the economy, thus generating revenue for the country. Therefore, the government made plans to list state enterprises on the Stock Exchange of Thailand within an

appropriate timeframe. It planned to list TOT on the stock exchange and to offer shares to the public by the end of 2002, and TOT made appropriate preparations for this transformation. On 23 July 2002, the Cabinet passed a resolution to transform TOT into the TOT Corporation Public Company Limited, according to the State Enterprises Capital Act B.E. 2542, TOT was then transformed into the TOT Corporation Public Company Limited on 31 July 2002, assuming the ownership, rights, debts, accountability, assets and 21,000 employees across the country from TOT while still being a state enterprise fully owned (100%) by the Ministry of Finance.

In administration, TOT has followed the principles of good governance since its transformation. In 2001, the Internal Audit Association of Thailand selected TOT as the state enterprise with the best practices in Corporate Governance. TOT is reorganising to be more business-like in order to be more flexible in administration and competitive in response to the needs of customers. Moreover, in preparing to be listed on the stock market TOT unofficially filed an application containing information on the public share offering and a draft prospectus to the Stock Exchange Commission (SEC) for their consideration (TOT 2006).

Figure 9.1 Organisational Chart of TOT Corporation Public Company Limited



Source: TOT Corporation Public Company Limited Annual Report

As shown in Figure 9.1, TOT has undergone reengineering in adapting the existing 39 departments into four functional groups to facilitate administration as follows (TOT 2006).

1. Corporate Group is divided into seven divisions, namely:

- Corporate strategy,
- Corporate development,
- Corporate resources,
- Finance,
- Information technology,
- Telecommunications technology and
- Operations.

2. Business Group consists of eight groups, as follows:

1. Fixed Line Services provide fixed-line telephone services, supplementary services, and telephone services on the Internet protocol network within the country, along with developmental support for other services related to fixed-line telephones.
2. Mobile Services is responsible for mobile telephone services, including pager and Common Based Radio telephones.

3. Data Services is responsible for all information transmission services, including leased time and leased circuit, and high-speed data communication services related to the Internet. The responsibilities also cover the development and expansion of all of these services.
4. Network Services is responsible for networking and infrastructure services so as to support the operations of other business groups and to build sufficient network infrastructure to meet demand.
5. Public Payphone Services is responsible for service provision as well as for the maintenance of public payphone equipment.
6. Related Business is responsible for developing and managing the non-core business of the company and its investments in other domestic companies, whether in telecommunications or other sectors.
7. Customer Services acts as the service centres to service customer needs in all segments; under the concept of the “Single Contact Point”. Besides this, the business group is in charge of developing and executing marketing and distribution plans, as well as defining target groups.
8. International Business is responsible for providing international telecommunications services.

3. Corporate Affairs

4. Audit Group

9.2. Rationale of the ABC System at TOT

At the moment TOT is facing significant challenges caused by the deregulation of the Thai telecommunications industry and the rapid introduction of worldwide competition. Strong competition also brings significant challenges as TOT needs to adapt to the new environment to survive and its management needs to obtain better and more accurate costing information in order to compete successfully.

The “*competition factor*” is one of the motivations for adopting management accounting innovations. It was identified as feasible that encountering higher competition from other lower cost developing countries (such as India and China) before 1997 might have encouraged several Thai organisations to adopt an ABC system (Abonyi, 1999; Chareonwongsak, 1999; Hataiseree, 1998). For example, Thai State Enterprises (TSEs) no longer enjoying a monopoly on power generation and sales.

Therefore, TOT has realised the need to identify the nature of costs as well as mapping costs to segments, activities, and services. The ABC system would enable TOT to determine accurate costs, and support cost reductions and efforts for continuous improvement. At present TOT uses a traditional cost accounting system that provides overall cost information. This is inadequate for supporting management in decision-making on key challenges such as customer service, product requirements, pricing, promotional campaigns, and so on. A new

costing system is considered to be one of the critical success factors to support the competitive advantages of TOT in a highly competitive environment.

Under the traditional costing system service costs are based on allocation of the administrative and overhead costs which are based on the direct cost of services without taking into consideration the cause and effect chains in different types of services. Therefore, it does not provide adequate information for analysing deviations in cost and profitability for each service/product category in relation to the level of service provided and/or products sold. Currently, TOT evaluates its operations and determines its key processes from a functional perspective. TOT has improved its processes and taken into consideration inefficiency with more adequate controls under current rules and regulations. However, TOT plans to emphasise its focus on the effectiveness and efficiency of supporting processes rather than focusing only on customer satisfaction.

In addition, it can be stated that many Thai organisations have already found the ABC system to be a useful tool. In particular, Thai State Enterprises (TSEs) are now taking bold steps to embrace new ideas (Buranakanonda 1997). In turn, TOT should motivate its employees using modern performance evaluation, which appraises individuals based on their performance related to the organisation's corporate vision and mission, and also to suggest better ways for improving TOT's other key business processes more effectively in the near future. Moreover,

it is possible that top management support may be one of the most important factors in implementing ABC in the Thai environment, on the grounds that top executives or senior managers in a Thai organisation are the ones who have the power to take action and make most of the decisions in the organisation (Morakul 2001). Therefore, this study is expected to make important contributions, with both practical and theoretical implications for the use of ABC systems in Thai organisations, particularly in Thai State Enterprises (TSEs). It will also fill gaps in the literature caused by the failure of existing theory to account for differences between countries, particularly western countries and Thailand, because it is unclear whether the success or failure of implementing an ABC system is attributable to culture or other factors. It is also intended that this study will improve the chances of the successful implementation of an ABC system. This could be very important in Thai organisations, particularly in Thai State Enterprises (TSEs) and other organisations in eastern developing countries.

9.3. Profile of Interviewees at TOT

Table 9.1 gives profiles of the interviewees with whom the researcher conducted interviews at TOT.

Table 9.1 Profile of Interviewees at TOT

Interviewees	Position in Organization	Involvement with ABC	Educational Background	No. of years at TOT
TOT/CEO	Vice President - Finance	Chief Executive	MSc. (Accounting)	30
TOT/DOA	Director of Accounting Department	Director of Accounting	MSc. (Accounting)	16
TOT/PCO	Head of Cost Accounting Division	Project Coordinator	BBA. (Accounting)	20
TOT/TM1	Senior Accountant	Implementation team	BBA. (Accounting)	7
TOT/TM2	Accountant	Implementation team	BBA. (Accounting)	8
TOT/TM3	Accountant	Implementation team	BBA. (Accounting)	11
TOT/TM4	Accountant	Implementation team	BBA. (Accounting)	10
TOT/USER	Director of Service Department	User	MSc. (Accounting)	23

Note: Data drawn from face-to-face interviews.

9.4. Research Findings

To form conclusions through optimal utilisation of the data collected, the data analysis was conducted using both statistical and descriptive methods. After each interview the interview data was transcribed and notes prepared, being translated from Thai into English. In terms of statistical analysis, the data was coded and extracted from the transcripts to produce a *“thinking unit framework”* in spreadsheet format for the *“content analysis”* procedure. From this, the most important factors for ABC implementation at TOT could be identified, which is the main purpose of this research. The descriptive analysis and findings from the interviews are discussed below. However, a measure of reliability of the data is a serious concern, so it was decided to apply the *“triangulation method”*, as mentioned in Chapter 5 (Research Methodology). Finally, the data analysis and the findings are shown as follows:

9.4.1. Demography

Eight employees of this organisation were interviewed. These consisted of three employees at management level, namely: CEO, DOA, and USER and five employees at operational level, namely: PCO, TM1, TM2, TM3, and TM4, as shown in Table 9.1. The information in Table 9.2 shows the characteristics of the interviewees as follows:

Table 9.2 Characteristics of the interviewees

Characteristics	Categories	Number (N = 8)	Percentage (%)
Gender	Female	8	100.00%
	Male	0	0.00%
	Total	8	100.00%
Educational background	Lower than bachelor degree	0	0.00%
	Bachelor degree	5	62.50%
	Master degree/ PhD	3	37.50%
	Total	8	100.00%
Qualification type	Accounting/ Finance	8	100.00%
	Other	0	0.00%
	Total	8	100.00%
Country of graduation	Thailand	7	86.00%
	Overseas	1	14.00%
	Total	8	100.00%

Note: Data drawn from face-to-face interviews.

Table 9.2 Characteristics of the interviewees (continued)

Characteristics	Categories	Number (N = 8)	Percentage (%)
Number of years at TOT	Less than 5 years	0	00.00%
	5-10 years	3	37.50%
	11-20 years	2	25.00%
	More than 20 years	3	37.50%
	Total	8	100.00%
Work experience in a variety of departments within the organisation	Work experience in a variety of departments	4	50.00%
	No work experience in a variety of departments	4	50.00%
	Total	8	100.00%
Foreign work experience/training	No foreign work experience/training	6	75.00%
	Foreign work experience/training	2	25.00%
	Total	8	100.00%
Knowledge of ABC before implementing ABC in the organisation	Excellent	0	0.00%
	Good	0	0.00%
	Adequate	0	0.00%
	Less than adequate	2	25.00%
	No knowledge of ABC at all	6	75.00%
	Total	8	100.00%

Note: Data drawn from face-to-face interviews.

Table 9.2 shows the interviewees' profiles in terms of gender, educational background, and work experience. All of the interviewees were female. The lowest level of education achieved was a bachelor degree in accounting/ finance in Thailand and three of the eight had achieved master's degrees. The interviewees had accounting experience of 5-10 years (37.50%), 10-20 years (25%), and more than 20 years (37.50%). Besides this, 50% had experience in a variety of departments. Moreover, 75% of the interviewees had no knowledge of ABC at all. It was apparent that all the interviewees had very good qualifications and educational backgrounds as well as very good work experience. However,

it is important to note that six of them had no knowledge or experience of ABC systems at all.

9.4.2. Determining Factors

Data were drawn from eight interviewees. They consisted of three employees at management level, namely; CEO, DOA, and USER and five employees at operational level, namely: PCO, TM1, TM2, TM3, and TM4, as shown in Table 9.1 and Table 9.2. Content analysis was used in order to identify the most important factors for ABC implementation at TOT. Fifty-four sub-factors were found. Table 9.3 summarises the sub-factors raised by the eight interviewees who were actually implementing ABC.

Table 9.3 Fifty-four sub-factors in implementing ABC raised by the eight interviewees

	Number of Interviewees (%)
1. Clear and concise objectives	100.00
2. Provided training adequately and continuously	100.00
3. Providing education, particularly of ABC systems	100.00
4. Level of success of ABC implementation	100.00
5. Fads and fashions	100.00
6. Lack of specialist technical skills required (external consultants)	87.50
7. Supportive from top management	87.50
8. Activities and cost drivers determined	87.50
9. Planning for data collection	87.50
10. On the job training	87.50

11. Reliable data	87.50
12. Too much data collection	75.00
13. Utility benefits of ABC output	75.00
14. Size of organisation is too big	75.00
15. Lack of knowledge and training about ABC	75.00
16. Data collection using face-to-face interviews, and standard forms	75.00
17. Inadequate size of ABC team	75.00
18. Decision making on pricing policy for Service Department	62.50
19. Increased accuracy of cost of services	62.50
20. Commercial software selected	62.50
21. Resource adequacy (including: budgeting, manpower, and computer system)	62.50
22. Privatisation	62.50
23. Increased effectiveness in the organisation	62.50
24. ABC implementation led to some other developments in internal accounting systems	62.50
25. Time-consuming	62.50
26. Replace ABC team members' PCs	62.50
27. Poor quality of information	62.50
28. ABC system could give clearer picture of the cost of services	62.50
29. Establish an "Activity Dictionary"	62.50
30. Choice of activities and difficulty of identifying activities	62.50
31. Difficulty of identifying cost drivers	62.50
32. Interview questions revised and developed	50.00
33. Selection of sample group of departments for pilot project	50.00
34. Resistance to new cost accounting system	50.00
35. Increased workload	50.00
36. Standard forms for data collection too complicated	50.00
37. Keeping ABC information up-to-date	50.00

38. Lack of experience among ABC team members	50.00
39. External consultant (Arthur Andersen SGV)	37.50
40. Link to competitive strategy	37.50
41. Established training and seminar programs about ABC for TOT staff	37.50
42. Stand-alone computer to support ABC system	37.50
43. Behavioural problems	37.50
44. Lack of staff time (none of the team worked full-time on ABC project)	37.50
45. Limited frame-time for ABC project	37.50
46. "ABC Project" established	37.50
47. Increased competitiveness	25.00
48. Selection of ABC team members (all from Department of Accounting)	25.00
49. Lack of staff motivation	25.00
50. Other routine work was given priority over ABC	25.00
51. Complexity of ABC implementation procedure	25.00
52. Sufficient of budgeting	12.50
53. Scope and framework of the pilot project	12.50
54. High expectations of ABC implementation	12.50

Remark: The number of interviewees is shown as a percentage as follows:

Number of Interviewees (n = 8 = 100.00%)

Number of Interviewees (n = 7 = 87.50%)

Number of Interviewees (n = 6 = 75.00%)

Number of Interviewees (n = 5 = 62.50%)

Number of Interviewees (n = 4 = 50.00%)

Number of Interviewees (n = 3 = 37.50%)

Number of Interviewees (n = 2 = 25.00%)

Number of Interviewees (n = 1 = 12.50%)

As shown in Table 9.3, these sub-functions were mapped in order to group them together. It is apparent that 54 sub-factors could be manipulated into nine main factors. However, it is important to note that the researcher's own judgment was used in classifying the sub-factors into various categories of main factors. The results are shown in Table 9.4.

Table 9.4 Fifty-four sub-factors could be manipulated into nine main factors

1. Top management support
2. Computer systems
3. Education and training
4. ABC team
5. Objectives of ABC implementation
6. ABC implementation process
7. Benefits of ABC implementation
8. Problems with ABC implementation
9. Level of progress of ABC implementation

9.5. Discussion and Conclusions

Of the eight employees interviewed individuals had somewhat different perceptions. The analysis of the case study data has indicated that 54 sub-factors and nine main factors can be identified as shown in Table 9.3, and 9.4. The findings are discussed below.

9.5.1. Main Factor 1: Top management support

In general, before starting an ABC implementation, it is important to consider that the effort involved in gathering, analyzing, and recording information on activities demands time, money, and manpower; it is not a task that should be undertaken lightly or without considerable forethought. Therefore, the researcher starts with this main factor “top management support”, as ABC systems cannot be successfully implemented without the wholehearted support of top management.

Indeed, top management support is seen as the most important factor influencing the success or failure of any new system in an organisation (IMA 1993). Much previous research has reported that an essential and key factor influencing success in implementing ABC is top management support¹. Shields and Young pointed out that the successful implementation of cost management systems, including ABC systems, depends on this factor (Shield 1989).

Interestingly, all of the TOT staff interviewed perceived that this factor was very important to the successful implementation of ABC at TOT. The interviewees had varying perceptions about this factor as follows:

¹ “Top management support” is one of the factors identified by Shields and Young, 1989. See “A Behavioral Model for Implementing Cost Management Systems” Journal of Cost Management, Winter, pages 17-21.

9.5.1.1. Clear and concise objectives (Sub-factor No. 7)

Eight interviewees (100.00% of the participants) raised this sub-factor. However, it is apparent that half of the comments from the interviewees, including one person at management level (CEO), and three at operational level (PCO, TM2 and TM4) that they knew the main objective of this project was to clarify the cost of services. The interviewees, for example, said that,

Interviewee (CEO): The main objective was to clarify the servicing cost for the P&S Department.

Interviewee (PCO): The purpose of this project was to use the information to calculate the cost of activities and services.

Interviewee (TM2): The main objective of ABC implementation was to calculate the cost of services.

Interviewee (TM4): ABC has been used for the Pricing Department.

In addition, half of the interviewees at management level (CEO and USER) and three of those at operational level (PCO and TM4) also indicated that they understood the benefits that TOT could reap from ABC implementation. In particular, one interviewee (USER) provided interesting details concerning the benefits of the new system and that it was a challenge for TOT in order to get new systems started in their organisation. The interviewees, for example said that,

Interviewee (CEO): Providing the training to make them understand clearly what TOT is doing and what benefit they could expect from this system.

Interviewee (USER): Everybody could take part in cost saving which might reward him or her in terms of a higher bonus. Our staff would know which area generates expenses and how to cut those expenses.

Interviewee (PCO): ABC has concerned staff regarding what the system is? What are the benefits of ABC?

Interviewee (TM4): I had to explain to the participants about the ABC system, its benefits and what kind of information we want.

However, two interviewees at operational level (TM1 and TM3) expressed how it seemed to be a policy from top management to implement the system. The interviewees, for example said,

Interviewee (TM1): I just know that the top management want to implement this system immediately because of some reason.

Interviewee (TM3): I know that top management want to implement this system.

Interestingly, one management interviewee (DOA) stated that it was not necessary inform all of the staff about the new system because TOT is a big organisation with 22,000 employees across the country. This interviewee, for example said that,

Interviewee (DOA): Even if the ABC system was relevant to every member of staff in the organisation. There was no need to inform every single one.

9.5.1.2. Provided training adequately and continuously (Sub-factor No. 8)

Eight interviewees (100.00% of the participants) raised this sub-factor. In general, providing staff in the organisation with new knowledge is the responsibility of top management. Improving staff understanding is one of the key factors in increased effectiveness in the organisation. Moreover, another important element of a successful implementation of ABC is training (Compton 1996). However, two management interviewees (CEO and USER), and one interviewee at operational level (PCO) indicated that TOT had provided seminars or training for their staff at every level across the country regularly at the Training Centre. The interviewees, for example, said that,

Interviewee (CEO): We have arranged training programs for our staff to continuously gain more knowledge.

Interviewee (USER): TOT has been providing seminars regularly for each department all over the country.

Interviewee (PCO): We need a long while to collect all the activity data and the one-year projected also includes all the training for staff.

On the other hand, five interviewees (one at management level, DOA, and four at operational level, TM1, TM2, TM3 and TM4) agreed that they had been to seminars and received training. However, they indicated that it was inadequate and did not support them in doing their jobs better. In particular, ABC was difficult to come to understand in a very short time and the topic of ABC was only one aspect of the accounting system. The interviewees, for example, said of training that,

Interviewee (DOA): It was quite rare.

Interviewee (TM1): For two times within two years, it was 1-2 days each.

Interviewee (TM2): Indeed, I want to get more knowledge about ABC, it may help the team to do a better job.

Interviewee (TM3): For me, it is very rare.

Interviewee (TM4): It was very difficult to make them understand ABC in a short time, because most of them had no idea about this before.

9.5.1.3. Providing education particularly ABC system (Sub-factor No. 11)

Not surprisingly, eight interviewees (100.00% of the participants) raised this sub-factor. The results showed that seven of the eight interviewees (all at management level CEO, DOA and USER: and four at operational level PCO, TM1, TM2 and TM4) realised that TOT did regularly provide seminars or training for their staff in each department and at each level across the country, as discussed earlier in sub-factor No. 8.

Nevertheless, it is very important to make it clear that there are two groups of staff that need to attend the training and seminars about ABC system. The first group is the TOT staff that is to be the participants or respondents as the sample group of an ABC project; the other group is made up of the TOT staff who is to be an implementation team (ABC team). Obviously, it is not necessary for the first group to become ABC experts (participants or respondents as the sample group), they must understand the need for ABC, its benefits and its key concepts, and also understand the significance of the data they provide. It is a serious point that incorrect answers given to questions asked by the implementation team (ABC team) can lead to an improper systems design. Again, a lack of understanding of the proper input required once the system is operational will lead to inaccurate costs. For the second group, the implementation team (ABC team), those actually designing and implementing the system, need to develop a thorough understanding of both the “how” and “why” of ABC. This is because ABC is as much an art as it is a science; it is not enough to only master the mechanics. The implementation team (ABC team) must comprehend the various approaches, level of scope, and system mechanics available in order to select and integrate those approaches that will result in the most cost-effective system for their organisation. Clearly, those who will be providing input for the system must understand the importance of the data they provide. Hence, the training and seminar designed for the special needs of each major group of staff should be provided to ensure the accuracy of input.

However, the ABC team confirmed that the training covered how to operate the computer software to support the ABC system at the same time. This was sufficient from the point of view of the project coordinator. She insisted that the consulting company provided both theoretical and practical knowledge. However, one interviewee at operational level (TM1) thought that the training was too short and that she only gained 20-30% of the necessary knowledge from the training and seminar programs. Moreover, one of the interviewees at management level (USER) agreed and insisted that TOT should provide more knowledge about ABC for staff, and particularly for the ABC team. The interviewees, for example, said that,

Interviewee (CEO): The ABC system is one of the training programs that is provided for all staff as well as the top management and heads of each department.

Interviewee (DOA): We have had seminars on this from time to time, but it was not only on the ABC system. There was something about computer software and general cost accounting.

Interviewee (USER): There is education and knowledge that we need to provide more of, particularly on the ABC system.

Interviewee (PCO): It has focused on the ABC as part of the accounting system. The staffs are from the admin department and engineering department. I can confirm; they have received sufficient training.

Interviewee (TM1): The consulting company has trained us in how to use the software through the training programs. All team members have to attend some seminars on the accounting system, including an ABC system.

Interviewee (TM2): The team has been provided with a seminar about ABC from the training centre as one part of accounting systems.

Interviewee (TM4): The team has been provided with knowledge of ABC, which was organised by the consulting company (SGV).

In addition, one interviewee at operational level (TM3) mentioned that she did not gain any knowledge about ABC from any training or seminar programs, because she had been

transferred from another department. This had meant it was too late for her and she had to learn it by herself.

9.5.1.4. Supportive from top management (Sub-factor No. 4)

Seven interviewees (87.50% of the participants) raised this sub-factor. The CEO herself indicated that the organisation's top management gave full support for the ABC project in three ways, including the budget, efficient computer systems, and continuous training. Two interviewees at management level (DOA and USER) and two at operational level (PCO and TM2) also confirmed that the support was perfect with computer systems always being upgraded and a stand-alone system used to support the ABC project.

However, it is important to note that one interviewee at management level (USER) and one interviewee at operational level (TM2) also provided more in-depth information indicating that some limitations existed as well. Moreover, one operational interviewee (TM4) stated that her opinion about the management support was that it was fair. The interviewees, for example, said that,

Interviewee (CEO): We had full support for these systems, including sufficient budget, efficient computer systems and continuous training.

Interviewee (DOA): It was perfect support. We did not have any problems with management support.

Interviewee (USER): It was sufficient and top management needed all divisions to give full support to the ABC project, but we still have some limitations.

Interviewee (PCO): The computer system was always upgraded.

Interviewee (TM2): The team has had very good support from top management, but there are still some limitations in some cases.

Interviewee (TM4): In my opinion, only one word – “fair”.

In addition, one operational interviewee (TM3) indicated more points of view: that she would like to see the top management realise that more time was needed for this project. One interviewee at operational level (TM1) did not mention anything about this topic.

9.5.1.5. Resource adequacy, including: budgeting, manpower, and computer system (Sub-factor No. 9)

Five interviewees (62.50% of the participants) raised this sub-factor. Again, the CEO herself confirmed that TOT has a sufficient budget and efficient computer systems. Interestingly, she did not point out anything about manpower as one of the most important factors for any project. However, one interviewee at management level (DOA) and three interviewees at operational level (PCO, TM2 and TM4) indicated that they were still subject to limitations in terms of numbers of the ABC team. It was not enough; this was clearly the main problem for the ABC project in TOT. Several interviewees, for example, said that,

Interviewee (CEO): TOT has sufficient budgets. The computer had had some problems; we have solved them over time. We have efficient computers both software and hardware.

Interviewee (DOA): TOT has limitations in getting enough staff to work in this area.

Interviewee (PCO): The ABC team members are not enough. The computer system is always being upgraded.

Interviewee: TM2: The team found that the main problem was the amount of work involved, a number of the team, and the capacity of the PCs.

Interviewee: TM4: The number of the team is inaccurate.

In addition, three interviewees, including one management interviewee (USER), and two operational interviewees (TM1 and TM3) did not mention anything about this topic at all. However, it is possible to state that one management interviewee (USER) was not involved with the budgeting, manpower, and computer system in this department at all because she was working outside the ABC project. Besides this, two operational interviewees (TM1 and TM3) also did not mention anything perhaps because it was easy to say nothing about something that they had no idea about or were not sure about.

9.5.1.6. Replace the new PCs for ABC team members (Sub-factor No. 20)

Five interviewees (62.50% of the participants) raised this sub-factor. Two management interviewees (CEO and USER) explained that PCs were replaced or upgraded from time to time. However, three operational interviewees (PCO, TM2 and TM4) gave conflicting statements, one of them (PCO) confirmed that there are no problems in this matter, while two others (TM2 and TM4) identified that even though the computer system had been upgraded, the new PCs' capacity was still a problem and that they do not work properly. The interviewees, for example, said that,

Interviewee (CEO): The computer systems have been upgraded both in software and hardware.

Interviewee (USER): Previously, the computers were quite old, but we changed them for new ones.

Interviewee (PCO): There are no problems.

Interviewee (TM2) New PCs have replaced old ones but their capacity is still the problem.

Interviewee (TM4): Our PC is not good enough even it is a new PC.

Apparently, one interviewee at management level (DOA) did not mention anything because she said that she joined this project when everything had already been arranged. Two interviewees at operational level (TM1 and TM3) also did not mention anything. It is possible to say that they might be happy with the new PCs and so it was nothing to speak up about.

9.5.1.7. Computer stand-alone to support ABC system (Sub-factor No. 45)

Three interviewees (37.50% of the participants) raised this sub-factor. Three interviewees at operational level (PCO, TM1 and TM2) stated that they have got new PCs as a stand-alone system to support the ABC project. The interviewees, for example, said that,

Interviewee (PCO): ABC now is used as a stand-alone system, because it is easy to process.

Interviewee (TM1): It is quite simple because we have been trained in how to use this software.

Interviewee (TM2): My job is to process all data to PC in order to categorise the activities on the stand-alone system.

However, five interviewees, including three management interviewees (CEO, DOA and USER) and two operational interviewees (TM3 and TM4) did not mention anything in this area.

9.5.1.8. Sufficient budgeting (Sub-factor No. 53)

Not surprisingly, only one interviewee (12.50% of the participants) raised this sub-factor. The CEO herself indicated “TOT has a sufficient budget”. There is no doubt about that in this matter because she is the person who takes full responsibility to ensure that the budget the ABC project receives meets its needs. It can be stated that seven interviewees did not mention this topic because it is in no way their responsibility.

Discussion above (Section 1, 1.1-1.8), the results show that there were two main points to be considered. Firstly, concerning the staff themselves. It is clear that they indeed had regular training and attended seminars but these were not sufficient for them to do a better job in this project. Obviously, it was difficult for TOT’s staff to understand a new system such as the ABC system within such a short time. One operational interviewee (TM1) estimated that she had learned approximately 20-30% of the necessary knowledge from the training and seminars. From the face-to-face interviews a strong impression emerged that everyone in the ABC team agreed that it was the same situation but no one was brave enough to speak up. From this it is possible to suggest lack of knowledge might be one of the major factors that to be considered. Secondly, even though the team received full computing support from top management, including new PCs training sessions for the new software and a stand-alone system some of the interviewees insisted that the capacity of the PCs was not good and that

the training sessions were too short. In this case, it is possible to indicate that lack of management support might be one of the major factors that must also be considered.

Apart from the above-mentioned, it is possible to conclude that the top management support did not add up to the full support that the management claimed had been provided because some insisted that there were limitations. In particular, the size of the ABC team was a major problem for this project, as was the capacity of the PCs. Moreover, the interviewees also indicated that training in using the computer software, resource adequacy (for the ABC team), and providing education about the ABC system were the most important factors.

9.5.2. Main Factor 2: Computer Systems

Three sub-factors were identified in this area. However, it is important to note, two of them in this topic have been discussed to support main factor number 1 (see Section 9.5.1.6, 9.5.1.7) – it has been found that in the top management support there were limitations (for example, in the capacity of the PCs supplied to the ABC team). Therefore, one more sub-factor is to be discussed as follows:

9.5.2.1. Selection of commercial software (Sub-factor No. 5)

It was necessary to make it clear in the first place that there were many companies trying to introduce their computer software to support the financial accounting system for TOT. As

recommended by the consulting company (Arthur Andersen SGV), it was decided to use the SAP R/2 software for TOT's financial accounting system, including for the ABC system. Clearly, five interviewees (62.50% of the participant) raised this sub-factor, including three interviewees at management level (CEO, DOA and USER), and two interviewees at operational level (PCO and TM1). The interviewees, for example, said that,

Interviewee (CEO): We are using the SAP R/2 as recommended by the consulting company.

Interviewee (DOA): Using the best software did not guarantee the reaching of the objectives.

Interviewee (USER): There were many companies trying to introduce their systems to us.

Interviewee (PCO): The training has included the use of this software (SAP R/2).

Interviewee (TM2): We have been trained in how to use this computer software for a while.

Interestingly, one of the interviewees at management level (DOA) mentioned that she thought that the staffs themselves were more important than anything else. Even with the very high levels of technology and modern computers and the best software, this did not guarantee reaching the objectives of the organisation at all; everything depends on the people.

Discussion above (Section 2, 2.1), it is possible to indicate that the computer systems were upgraded to support the ABC system and to operate as a stand-alone system. The computer software SAP R/2 was selected on the recommendation of the consulting company who provided training and seminar programs for the ABC team during the one-year contract.

However, it is apparent that the new PCs were not good enough. Moreover, the ABC team confirmed that the training and seminar sessions were good enough and that it was quite simple to operate this software. The capacity of the PCs may be a significant factor leading to the success or failure of the ABC implementation in this organisation.

9.5.3. Main Factor 3: Education and Training

Four sub-factors were identified to support this topic. Two sub-factors have already been discussed, the results of which showed that although TOT staff received training and seminars regularly the training was too short and was not sufficient. It was difficult for TOT staff to understand the ABC system in such a short time. In these circumstances it is possible to summarise that lack of knowledge is one of the major factors to be considered. From this point, another two sub-factors are to be discussed to support this topic as follows:

9.5.3.1. On the job training (Sub-factor No. 31)

Seven of the eight interviewees (87.50% of the participants) raised this sub-factor, including two interviewees at management level (DOA and USER) and five interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). They indicated that they had to learn everything about the ABC system by themselves, as someone said “learning by doing”. However, one interviewee at management level (CEO) did not mention this area at all. The interviewees, for example said,

Interviewee (DOA): It is all on the job learning here.

Interviewee (USER): We have been on the job learning.

Interviewee (PCO): Staff had to recheck or correct things using their own knowledge and experience.

Interviewee (TM1): I have to study by myself, read from the handout.

Interviewee (TM2): I had to learn it by myself.

Interviewee (TM3): I had to understand it by myself.

Interviewee (TM4): We had to sort it out by learning by doing.

9.5.3.2. Established training and seminar programs about ABC for TOT staff

(Sub-factor No. 39)

Three interviewees (37.50% of the participants) raised this sub-factor. However, all of them are interviewees at an operational level (PCO, TM2 and TM4). Additional results show that 20% of the organisation's workforce attended the training and seminars and that most of these were heads of divisions or departments. The interviewees, for example, said,

Interviewee (PCO): We can do it just 20%.

Interviewee (TM2): Most of the attendees were accountants from different departments.

Interviewee (TM4): Only the Heads of Divisions and Departments had a chance to attend seminars, because of the time limitations.

In addition, three interviewees at management level (CEO, DOA and USER), and two interviewees at operational level (TM1 and TM3) did not mention this area. It is possible to state two points from this: for the interviewees at management level, they were not involved with the training and seminars procedure; apparently they were the attendees in this project. For the interviewees at operational level they were involved directly with the training and seminars procedure.

Discussion above (Section 9.3, 9.3.1, 9.3.2), the results show that TOT staff received training and attended seminars regularly, but even so the training was too short and was not sufficient. Besides this, it was difficult for TOT staff to come to understand the ABC system in such a short time. Hence, it was impossible to gain sufficient knowledge of the system from the training and seminar at all. Interestingly, TOT staff had very good educational backgrounds in accounting as shown in Table 9.1 and Table 9.2. However, some of them mentioned that they could get only 20-30% of the necessary knowledge about the system from the training and seminars. Obviously, they had to improve their knowledge about the ABC system by themselves, which they called “learning by doing”. Moreover, it was apparent that only 20% of all the employees in the organisation attended the training and seminar programs about the ABC system and that most of these were heads of divisions or departments. Finally, in these circumstances it is important to note that not only lack of knowledge, but also lack of the training and seminar programs, has to be considered as major factors in ABC implementation at TOT.

9.5.4. Main Factor 4: ABC team

One sub-factor (SF. 35) was identified to support this topic. It is important to note that the implementation team at TOT was selected from the department of cost accounting. This was made up of five employees, including one project coordinator and four team members. They have very good background education and working experience in accounting. Besides this,

they have been working in the cost accounting department for many years (see Table 9.1 and 9.2). Two interviewees (25.00% of the participants) raised this sub-factor. Both are interviewees at operations level (PCO and TM1). The interviewees, for example, said,

Interviewee (PCO): TOT team members were selected from the staff in the department of cost accounting.

Interviewee (TM1): Well-educated staff can achieve an ABC's objective.

However, some ABC researchers have suggested that it is not necessary for all team members to have a financial or accounting background. In fact, it is sometimes negative for a team to have a traditional cost mindset (Grieco 1995). Cooper (1990) confirmed that several important criteria were identified for selecting team members, such as being intelligent and flexible in their approach to problem solving. Moreover, he noted that knowledge of cost accounting was not considered criteria for selection although it was felt that at least one member of the team had to understand the firm's existing accounting systems. Furthermore, to achieve the objectives of an ABC project, the implementation team should include members from several disciplines other than accounting or finance (Cooper 1990). It has also been suggested that the team should include representatives from manufacturing, marketing, management information systems (MIS) and accounting. Involving members from across the organisation ensures a broader acceptance due to better communication, transfer of knowledge and awareness of the system's benefits (O'Guin 1991).

From the discussion above (Section 4), it seems that TOT did not realise those criteria that have been addressed in prior ABC research (e.g. Cooper 1990; O'Guin 1991; Grieco 1995). Hence, in the case of TOT, the ABC team was selected from staff who worked in the department of cost accounting, this being the main criteria for selecting team members. It is very important to state that it is not at all a multidisciplinary team.

At this point, as discussed earlier (see Section 9.5.1-9.5.4), finally, it can be concluded as follows:

- ✓ The top management support was not the full support that they claimed it to be because some insisted that there were some limitations to it. Support from top management is always critical, this support must not only be financial, but also consist of providing leadership, adequate personnel resources, and additional support from an outside computer firm (as discussed in Section 9.1).
- ✓ The computer systems were upgraded to support the ABC system and to operate as a stand-alone system. The computer software SAP R/2 was selected on the recommendation of the consulting company. The capacity of the new PCs was not good enough (as discussed in Section 9.2).
- ✓ TOT staff received training and attended seminars regularly, but even so, the training was too short and was not sufficient (as discussed in Section 9.3).

- ✓ The ABC team was selected from staff who worked in the cost accounting department and this was the main criteria for selecting team members at TOT. It is not the multidisciplinary team that in most cases is required to conduct an ABC project (as discussed in Section 9.4).

9.5.5. Main Factor 5: Objectives of ABC

Naturally, before embarking on any project, it is important to know what the project is expected to accomplish. A project to implement ABC is no exception. Without a fairly precise definition of its objective, the project will result in an ABC system designed to solve the general problems of some hypothetical organisation, not the specific problems of the real organisation. Again, without a clearly stated objective, the ABC system resulting from the project will not meet the needs of the organisation in a cost-effective manner (IMA 1993). It was apparent that six of the sub-factors concerned the objectives of ABC implementation at TOT, such as being a fad or fashion, decision making on pricing policy for the service department, the increased accuracy of cost of services, increased effectiveness in the organisation, link to competitive strategy, and increased competitiveness. The interviewees made various statements about these factors as follows:

9.5.5.1. Fads and fashions (Sub-factor No. 23)

Eight interviewees (100.00% of the participants) raised this sub-factor. Two interviewees at management level (CEO and DOA) suggested that previously they had never been aware of operating costs in each area in their organisation, or else they did not have any idea of the accuracy of the information available. For this reason they considered the possibility of utilizing such a system in the organisation and saw that clearly ABC was an ideal one that could serve their needs. They had a specific objective and this system was suitable for the organisation. Moreover, both interviewees insisted that it was not a matter of fads or fashions at all. The interviewees, for example, said that,

Interviewee (CEO): We really needed an ABC system because we had an exact objective; we were definitely not following fashion.

Interviewee (DOA): ABC is currently necessary, it is suitable for TOT at the moment; we are not following market trends or fashion.

On the other hand, different ideas were expressed. One interviewee at management level (USER) said that “I had been to one company in America where they used this system for their cost accounting, and is widely accepted in many countries like the UK and US”. However, this could be interpreted as following a fad or fashion. Besides this, three interviewees at operational level (PCO, TM2 and TM3) also confirmed that they followed other organisations in the public sector in implementing this system. The interviewees, for example, said that,

Interviewee (PCO): TOT followed other organisations.

Interviewee (TM2): It is possible that some Thai State Enterprises are going to implement this system.

Interviewee (TM3): TOT followed other organisations such as EGAT, MEA.

Moreover, one interviewee at operational level (TM1) suggested that TOT's top management wanted to implement this system. Also, another interviewee at operational level (TM4) confirmed that an ABC system was not suitable for TOT at all; it seemed to be top management policy to implement this system. It is possible to say that there are two reasons to explain her response, firstly, she has been working in this department for two years, and has been selected as a member of the implementation team. Secondly, she indicated that she has no idea about ABC systems and had to learn everything by herself because she had little small chance to attend training or seminars about ABC. Thus, it can be stated that the qualification of the team members might have to be further concerned. The interviewees, for example, said that,

Interviewee (TM1): It was a policy from top management to implement this system for some reason.

Interviewee (TM4): It was a policy from top management to implement this system. The ABC system is not suitable for TOT.

9.5.5.2. Increased accuracy of cost of services (Sub-factor No. 2)

Five interviewees (62.50% of the participants) raised this sub-factor. Clearly three interviewees at management level (CEO, DOA and USER), and two interviewees at operational level (PCO and TM2) thought that they needed to improve their cost accounting systems, and moreover, that the ABC system could help the organisation to get a clearer picture of the cost of services. Several interviewees, for example, said that,

Interviewee (CEO): They needed to learn about the cost of services.

Interviewee (DOA): We needed to improve our cost accounting, to get a clear picture of costs.

Interviewee (USER): We needed to know about the structure of the cost of services.

Interviewee (PCO): For the objective of calculating the cost of services. The amount of the cost of services was clearer.

Interviewee (TM2): ABC has been used to calculate the cost of services.

However, three interviewees at operational level (TM1 TM3, and TM4) did not mention anything in this area; it is possible to say however that they might not have clearly understood ABC or its benefits or that top management did not make it clear before starting the ABC implementation in the organisation. The one thing they know is that to implement the ABC system is a policy from top management and their organisation follows other organisations.

9.5.5.3. For decision-making on pricing policy for the service department (Sub-factor No. 3)

Five interviewees (62.50% of the participants) raised this sub-factor. All interviewees at management level (CEO, DOA and USER), and two interviewees at operational level (PCO and TM4) indicated that the ABC system could help the organisation for the purpose of decision making as one of the objectives of the project. Several interviewees, for example, said that,

Interviewee (CEO): It was essential information that they needed to know besides the top management.

Interviewee (DOA): The system should yield benefits for decision-making.

Interviewee (USER): We want to use this system as a tool for helping decision-making.

Interviewee (PCO): The information about cost of service has been sent to the Pricing Department.

Interviewee (TM4): The results of ABC have been used for the Pricing Department.

However, three interviewees at operational level (TM1, TM2 and TM3) did not mention this area. It is possible to point out that this might be for the same reasons as explained earlier in the previous sub-factor No. 9.2, such as it is a policy from top management and follows other organisations.

9.5.5.4. Increased effectiveness in the organisation (Sub-factor No. 13)

Five interviewees (62.50% of the participants) raised this sub-factor. Three interviewees at management level (CEO, DOA and USER) and two interviewees at the operations level

(PCO and TM2), had similar idea and stated that they needed to have good modern accounting information systems. ABC itself, its details, concepts and logic were quite clear. They could understand the causes and effects of costs in the whole organisation. Particularly, if the ABC system were fully implemented, it would make a great contribution to TOT as a whole in order to increase the effectiveness of the organisation. Other interviewees, for example, said that,

Interviewee (CEO): We need to have a good modern accounting information system.

Interviewee (DOA): ABC itself, its details, concept, and logic were quite clear. We can see and understand whether resources have been properly utilised.

Interviewee (USER): If the ABC system were perfectly implemented it would make a great contribution.

Interviewee (PCO): We now know about the cost of services, and what activities are VA or NVA.

Interviewee (TM2): ABC is one of the modern systems now. TOT has to prepare a good system for the future within two years.

However, three interviewees at operational level (TM1, TM3 and TM4) did not mention this topic at all. Interestingly, it means that 75% of the team members (three of the four) said nothing about this. It can be stated that the majority of the team members do not have a clear picture of ABC implementation in terms of objectives, goals, and benefits.

9.5.5.5. Link to competitive strategy (Sub-factor No. 6)

Three interviewees (37.50% of the participants) at management level (CEO, DOA and USER) raised this sub-factor. TOT was going to be transformed from a public sector in to a public company and that meant it would face significant challenges. Therefore, they realised

that competitiveness was critical, so that an ABC system represents a solution in this situation, in improving the organisation's efficiency in a highly competitive environment.

The interviewees, for example, said that,

Interviewee (CEO): TOT was looking for systems that could serve us in the cost management regime. ABC was the ideal one that could serve TOT's needs.

Interviewee (DOA): ABC currently is necessary for TOT.

Interviewee (USER): They realise how important the accounting data is now, all cost relevant data for price setup that the competitive has been higher as we are no longer a monopoly business.

Obviously, all the interviewees at operational level (PCO, TM1, TM2, TM3 and TM4) did not point out this area at all. It is important to state that they still do not understand the essentials of the ABC system or what the objectives or benefits of this project may be. This would imply that they need more knowledge about ABC.

9.5.5.6. Increased competitiveness (Sub-factor No. 1)

Two interviewees (25.00% of the participants) raised this sub-factor, including one interviewee at management level (CEO) and one interviewee at operational level (TM2). The interviewees, for example, said that,

Interviewee (CEO): We strongly believe that a good system and talented staff would benefit the organisation in the form of effectiveness in competing in the current highly competitive business environment.

Interviewee (TM2): It is a benefit for TOT in terms of competitive strategy in the future.

Six of the eight interviewees including two interviewees at management level (DOA and USER) and four interviewees at operational level (PCO, TM1, TM3 and TM4) did not bring up this area. It is possible to say that this might be related to lack of knowledge about the ABC system, which is most important since they have to do as much as they can to implement the new system in the organisation. It seems that this has not been done adequately.

Nevertheless, it is important to note that there were two sets of different perceptions among employees at management and operational levels as was shown in the discussion of the topic of “fads and fashions”, as discussed above. It may concern the procedure used in the implementation process in the organisation. For example: “Clear and concise objectives (all employees have been told about the ABC project, particularly, the objectives of ABC)²”, as the most important procedure in the first place. It seems that this has not been done sufficiently. Therefore, it is possible to say that the insufficiency of procedures used concerning “clear and concise objectives” might affect the ABC implementation process in this organisation because the employees at operational level (ABC Team) could not understand essential aspects of the objectives.

² “Consensus about and clarity of the objectives of the cost management systems” is one of the factors identified by Shields and Young, 1989. See “A Behavioral Model for Implementing Cost Management Systems” Journal of Cost Management, Winter, pages 17-21.

Moreover, the results confirmed that the employees at operational level had no idea about some of the objectives, such as the link to competitive strategy or increased competitiveness, because most of them did not mention those areas at all. For them, the ABC system was used for calculating the cost of services. It seems that they did not receive sufficient knowledge about ABC at the first stage of this project. This would imply that they need more knowledge about ABC, and also the qualifications of the team members might have to be considered.

At this point, and from the above discussion (Section 9.5.5, 9.5.5.1-9.5.5.6), the original objectives of ABC project at TOT were to:

- ✓ Increase the accuracy of the costing of services
- ✓ Improve decision-making on pricing policy for the service department
- ✓ Give increased effectiveness in the organisation
- ✓ Link to competitive strategy
- ✓ Increase competitiveness.

9.5.6. Main Factor 6: ABC Implementation Process

The ABC system has been widely accepted for many years as a better system for measuring resource consumption than traditional cost accounting systems and it has been used successfully by a large number of companies. Furthermore, it has mainly been applied to

manufacturing but can also be used in service industries (Cooper 1990; Rotch 1990; Shields and McEwen 1996). However, many companies are doomed to failure before they begin implementing the ABC system. In part this is due to a number of misconceptions about ABC systems and what they are actually designed to accomplish (Compton 1996). Hence, some major decisions need to be made before an ABC system can be implemented such as the design of the system, appointing an implementation team, collecting data, and so on (Compton 1996).

Twelve sub-factors were identified to support this area. The TOT staff interviewed perceived that those sub-factors were very important to the successful implementation of ABC at TOT. Twelve sub-factors will be presented as an entire process (step by step) from the beginning until the end of the ABC implementation process at TOT. The interviewees had varying perceptions about those factors as follows:

9.5.6.1. External Consultant (Sub-factor No. 10)

Apparently, at a first step, TOT brought in consultants from Arthur Andersen (Thailand) to study the project of improving the financial accounting systems; as recommended by this company, SAP R/2 was selected as the software program and an ABC system was one part of the project. Three from eight interviewees (37.50% of the participants) raised this sub-factor,

including two interviewees at management level (CEO and USER) and one interviewee at operational level (PCO). The interviewees, for example, said,

Interviewee (CEO): SGV has been selected as a consultant company and have selected SAP R/2 computer software for the financial accounting system.

Interviewee (USER): It's Arthur Andersen.

Interviewee (PCO): TOT hired Arthur Andersen as the consulting company.

Moreover, it is important to note that the implementation process started by forming an implementation team comprised of TOT's staff from the accounting department and employees from Arthur Andersen worked as their consultants.

9.5.6.2. "ABC Pilot Project" Established (Sub-factor No. 14)

Eight interviewees (37.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and DOA) and one interviewee at operational level (PCO). The interviewees, for example, said,

Interviewee (CEO): We started with the pilot project.

Interviewee (DOA): ABC team project has already been set up.

Interviewee (PCO): I also recruited the staffs that were going to be responsible for the ABC system.

It has been suggested that an ABC project does not need to be implemented all at (Grieco 1995). On the other hand, while a small or mid-sized organisation might be able to move straight into an implementation of ABC, a full organisation-wide implementation of ABC at a large firm is usually ill-advised unless preceded by one or more pilot projects. Instead, the

insights gained from the pilot project can be used to save time and resources when a full implementation of ABC is begun (IMA 1993).

With this in mind, TOT has done the right thing by establishing a pilot project. Obviously, the insights gained from the pilot study can then be used to save time and resources when a full implementation of ABC is begun.

9.5.6.3. Scope and framework of the pilot project (Sub-factor No. 37)

One interviewee (12.50% of the participants) raised this sub-factor; it was a project coordinator (PCO). It is a main responsibility of the pilot coordinator to determine the scope of the framework and so on. As she mentioned, “the scope of the framework was to determine a number of activities and the cost drivers and was expected to generate an example of an activity dictionary as a guideline for ABC at TOT”.

Clearly from this an “activity dictionary” should be delivered as a tangible output at this stage. However, it is important to state that the scope of framework should consider things more, such as time schedule and budget. It should state a summary of the tasks that need to be performed and estimate time requirements for each, in order to develop a time-phased budget for monitoring the progress and cost performance of the project.

9.5.6.4. Selection of sample group of departments for pilot project (Sub-factor No. 36)

Four interviewees (50.00% of the participants) raised this sub-factor. All of them are interviewees at operational level (PCO, TM1, TM3 and TM4). The interviewees, for example, said that,

Interviewee (PCO): A working group decided to do a pilot project by selecting some departments in Bangkok and surrounding areas and some from provincial areas.

Interviewee (TM1): A few departments were selected.

Interviewee (TM3): We had to select a few departments as the sample group because the limitations of the time-frame for this project.

Interviewee (TM4): As we had a limitation about the time-frame we needed to select only a few departments to make up the sample group.

Interestingly, the findings show that a small number of departments have been selected as a sample group for the pilot project. These consisted of some departments in Bangkok and also some departments in provincial areas.

9.5.6.5. Established training and seminar programs about ABC for TOT staff (Sub-factor No. 39)

It is necessary to make it clear that these training and seminar were established for the TOT staff that were going to take part as the sample group (participants or respondents) for the pilot project. As has been acknowledged, the important element of a successful implementation of ABC is training; however, it is not necessary for the sample group to become ABC experts. Instead they must understand the need for ABC, its benefits and its

key concepts. Furthermore, they must understand the significance of the data they provide. Thus, training and seminar sessions designed for their special needs should be provided to ensure the accuracy of input. Interestingly, three interviewees (37.50% of the participants) raised this sub-factor, including three interviewees at operational level (PCO, TM2 and TM4). The interviewees, for example, said that,

Interviewee (PCO): We can do it just 20%.

Interviewee (TM2): Most of the attendees were accountants from different departments.

Interviewee (TM3): Only the heads of divisions or departments had a chance to attend seminars because of the time-limitation.

The findings show that training and seminars sessions were organised for TOT staff. However, they planned to provide training and seminars for staff that were going to be the sample group (participants and respondents) and so it was apparent that they could only offer this to the 20% of employees who were attendees. Beside this, most of the participants were accountants and heads of divisions or departments only.

9.5.6.6. Planning for data collection (Sub-factor No. 27)

The implementation team had a clear picture of where they were going for data collection. However, the goal of data collection is to accumulate the information necessary to identify the activities. There are three primary sources for the information needed to develop an ABC system: people, the general ledger, and the organisation's computer system. Clearly, the people who do the work are the major source of information. They can provide information

about the organisation's activities, the resources consumed and the performance measures used (IMA 1993). Six interviewees (75.00% of the participants) raised this sub-factor. However, the CEO and USER did not mention this area because they did not take part in this process. The interviewees, for example, said that,

Interviewee (DOA): We tried to contain every job area as much as we could to have a good sample group. We had trained our staff before starting the fieldwork. The seminar was set to provide them with knowledge.

Interviewee (PCO): We collected from Bangkok and then went to provincial areas; we prepared the staff as the representatives. The implementation team was equipped to collect the data in order to determine all the activities.

Interviewee (TM1): We went to collect data in provincial areas and after that we collected it in Bangkok and surrounding areas. I know that the PCO selected the big provinces that cover all areas of service.

Interviewee (TM2): We made a plan to collect the data by interview and using standard forms as the instrument. We collected data in both Bangkok and the provincial areas, and the participants were told in advance.

Interviewee (TM3): We went to collect data in Bangkok and surrounding areas and some provincial areas.

Interviewee (TM4): The PCO made a plan for the ABC team – how to collect the data, where and when. The team had to provide some information about ABC for the participants at first, to make it clear, what was the objective of this project, what we wanted, how to fill in the standard forms.

The findings show that the project coordinator, with other members of the team, began to discuss and summarise the tasks necessary to complete the project, for example, how to select some departments as the sample group, determine groups of staff as participants for the project, how to organise the training and seminars for the participants, what kinds of data or information the implementation team needs, and also the schedule for the action plan. It was

helpful to formalise this plan because planning forces the project team to think about the tasks at hand, inter-relationships, time constraints, and so on.

9.5.6.7. Data collection using face-to-face interviews and standard forms (Sub-factor No. 32)

As is generally accepted of data collection in such circumstances, the majority of the information to be used in developing the system should come from interviews and/ or questionnaires directed at the organisation's personnel because they are the best source to ensure that all eventualities are taken into consideration. Such questionnaires must be carefully designed. They must be complete and they must ask the right questions in an appropriate manner. Moreover, the most critical components of the interview process are a prepared interviewer and a prepared interviewee. Six interviewees (75.00% of the participants) raised this sub-factor. One is an interviewee at management level (DOA) and five are interviewees from operational level (PCO, TM1, TM2, TM3 and TM4). The interviewees, for example, said that,

Interviewee (DOA): We get all the information from the interviews.

Interviewee (PCO): They interviewed directly with the heads of department and heads of divisions. Filled in the forms and were interviewed.

Interviewee (TM1): We can get the information right away by using face-to-face interviews and standard forms as instruments. We always demonstrated how to fill in the standard forms step by step.

Interviewee (TM2): My job was to collect data by interviewing and via standard forms.

Interviewee (TM3) I collected the data by interviewing and standard forms.

Interviewee (TM4): It was my main job to perform data collection.

The findings confirm that the implementation team collected the data using face-to-face interviews and standard forms as the instruments for gathering information for the ABC project at TOT.

9.5.6.8. Interview questions revised and developed (Sub-factor No. 33)

Four interviewees (50.00% of the participants) raised this sub-factor. One of them is an interviewee at management level (DOA), and three of them are interviewees at operational level (PCO, TM1 and TM2). The interviewees, for example, said that,

Interviewee (DOA): In cases where the questions were not cleared we then had to revise the question in order to get the correct answer from the interviewees.

Interviewee (PCO): We demonstrated an example; how to fill the forms.

Interviewee (TM1): The interview questions were improved.

Interviewee (TM2): The team developed all the interview questions by using job descriptions as guidelines.

These findings show that the interview questions were developed and revised from time to time to ensure that the implementation team could get the right kind of information.

9.5.6.9. Reliable data (Sub-factor No. 34)

Interestingly, seven interviewees (87.50% of the participants) raised this sub-factor. Two of them are interviewees at management level (DOA and USER) and five of them are interviewees at operational level (PCO, TM1, TM2, TM3 and TM4). The interviewees, for example, said that,

Interviewee (DOA): Some data that we used to set activities, we admitted was not 100% correct, particularly, from the standard forms.

Interviewee (USER): The cost information I have received, it's truly improved. The information is more reliable and is being used more for reference.

Interviewee (PCO): We compared the data between two departments but do the same job. We collected data every month and compared them later.

Interviewee (TM1): Some data is impossible. I have been working here for 10 years, in many departments, so, I know.

Interviewee (TM2): The project manager told me that it was not a big problem because someone in our team had to take responsibility for this and some data has been approved by the head of each division or department.

Interviewee (TM3): Those data have been approved by the head of each division or department.

Interviewee (TM4): All the data has to be approved by the head of division or department.

The implementation team collected the data by using face-to-face interviews and standard forms as the data collection instruments. The team confirmed that the data from the interviews was fine. On the other hand, the data from the standard forms might have some problems because some were inaccurate. However, the project manager insisted that all data from the standard forms have been already approved by the head of the division or department. It means that the head of each division or department has to take the responsibility for those data. Moreover, the teams compared the data between two departments doing the same job or also by collecting the data every month and compared it later, in order to confirm the reliability of those data as well as they could.

9.5.6.10. Activities and cost drivers determined (Sub-factor No. 26)

Seven interviewees (87.50% of the participants) raised this sub-factor, including two interviewees at management level (CEO and USER) and five at operational level (PCO, TM1, TM2, TM3 and TM4). The interviewees, for example, said that,

Interviewee (CEO): It is difficult to set activities and cost drivers in a big organisation such as TOT.

Interviewee (USER): This was one of the most difficulty stages, and finally we could not identify some activities because no one accepted that their job was NVA.

Interviewee (PCO): At first we had 1000 activities, but now we have reduced this to 264 activities.

Interviewee (TM1): We had more than 1000 activities, you can imagine, a huge amount of data. Finally, we cut them into approximately 300 activities now.

Interviewee (TM2): There were a lot of activities in the first place; we reduced these into approximately 300 activities.

Interviewee (TM3): My main job was to determine and identify the activities and select cost drivers, we got more than 1000 activities, and we have reduced these into approximately 150 activities now.

Interviewee (TM4): It was more than 300 activities.

As interviews were completed, the team required many data processing reports. The findings show that all the information from the data collection process was stored on a stand-alone computer based system in order to identify the activities. The team found that a large number of activities had been identified at the first stage. There was approximately 1000 activities, however the team reduced those activities down to 300 activities (or 264 activities; confirmed by PCO) at present.

9.5.6.11. Establish an “activity dictionary” (Sub-factor No. 38)

Ideally, the ABC team has to determine the appropriate activities and also analyse and identify cost drivers representing them in an activity dictionary. It is hoped that having an activity dictionary will encourage on-going ABC use. Five interviewees (62.50% of the participants) raised this sub-factor. All of these are interviewees at operational level. The interviewees, for example, said that,

Interviewee (PCO): We could classify a huge amount of data, analysing, grouping, and mapping to get an activity dictionary in 6-8 months.

Interviewee (TM1): We can get it, but it seems to be incomplete. Some parts of it are inaccurate. It is in the discussion process.

Interviewee (TM2): We can have an activity dictionary, but it is not complete yet.

Interviewee (TM3): We can get it but we have to correct some points that are not clear.

Interviewee (TM4): TOT can have an activity dictionary, but we need to revise some points.

The findings show that the ABC team confirmed that they were able to establish an activity dictionary for their organisation and, as mentioned by the project coordinator, it took 6-8 months to arrive at it. However, it is important to state that it is not complete and has to be correctly revised in some points.

9.5.6.12. Keeping ABC information up-to-date (Sub-factor No. 48)

Four interviewees (50.00% of the participants) raised this sub-factor, including one interviewee at management level (USER) and three interviewees at operational level (TM1, TM2 and TM4). The interviewees, for example, said that,

Interviewee (USER): The need to change TOT's structure really causes change in some activities.

Interviewee (TM1): If the organisation structure is changed, it may be necessary to carry out data collection again to revise some activities.

Interviewee (TM2): The team has to carry out data collection again; because the organisation structure has been changed after privatisation took place.

Interviewee (TM4): After TOT's privatisation, we have to collect new data in order to adjust or improve some activities that might be affected because of the organisation change.

Clearly, it was found that the team needs to carry out more data collection. This is not only to get more accurate data to improve some activities but also to correct some activities after the privatisation.

At this point, and from the above discussion (Section 9.5.6, 9.5.6.1-9.5.6.12), it is clear that the ABC implementation process at TOT involves twelve processes. First of all, they hired Arthur Andersen (SGV) as consultants to help improve their financial management, and SAP R/2 software was selected for the project, however, an ABC implementation was only one part of this project. Obviously, TOT is a very big organisation; there are 22,000 employees across the country. Hence, a pilot project was considered and established in order to organise the ABC undertaking. The main idea of this project was to determine the appropriate

activities and cost drivers suitable for the organisation. However, they expected to get an activity dictionary as a tangible output from the project.

Apart from this, some departments in Bangkok and provincial areas had been selected to make up a sample group for the ABC pilot project. The ABC implementation team planned to provide the training and seminar programs for a sample group in order to ensure that they would understand the key concepts of ABC, such as its objectives, benefits and also what kind of information the team was looking for. The team planned to perform data collection using face-to-face interviews and standard forms as research instruments. All the interview questions and standard forms had been established and revised from time to time to ensure that the team received accurate information. Moreover, the reliability of the data was one of the topics that the team was concerned with. Due to this factor the team used triangulation to verify the accuracy of the data, such as by comparing the data from two departments doing the same job, or by collecting data every month and comparing it later.

As previously mentioned, the data collection was completed. The next step was to identify the activities and select the cost drivers. It was clear that a huge amount of data were found. All data were stored on a stand-alone computer system and the software allowed to process the outputs. Thousands of activities were found at first; however, the team had to determine and select the appropriate activities to represent in the ABC model. Approximately 300

activities were identified (264 activities; confirmed by PCO). In terms of the cost drivers the project coordinator stated that there were more than a hundred cost drivers selected. Finally, an activity dictionary was established as the first tangible output of this project; however, it is important to note the team believe that the activity dictionary needs to be corrected and improved. The implementation team needs to perform further data collection to get more accurate data to improve some activities since privatisation has caused changes within the organisation.

9.5.7. Main Factor 7 Benefits of ABC Implementation

In most cases, managers who understand the ABC system realise that accurate, relevant cost data enables them to identify and achieve innovation and continuous improvement; these are the benefits they can take from an ABC implementation (Cokins 1992). The use of an ABC system in both manufacturing and non-manufacturing firms is advocated to be valuable. For example, many researchers have suggested that ABC increases the accuracy of cost allocation to products (Cooper and Kaplan 1991; Mitchell et. al. 1994). It is also believed that greater processing of the cost information and subsequent realization of accurate and relevant cost measurements are beneficial for decision making (Hicks 2005). Mitchell also advocates how decision making is enhanced by the cost information that ABC provides, as new types of information are able to be viewed (Mitchell 1994). Eight sub-factors were identified to support this main factor. However, five of them in this topic have been discussed to support

main factor number 5 (see Section 9.5.5.2, 9.5.5.3, 9.5.5.4, 9.5.5.5, and 9.5.5.6). The results show that five of them were the initial objectives of the ABC implementation project. Nevertheless, these can be identified as the benefits³ of ABC implementation as confirmed by some researchers that an ABC system can help an organisation to increase the accuracy of its costing of services, improve decision-making on pricing policy for the service department, increase effectiveness in the organisation, link to competitive strategy, and increase competitiveness (Innes 1996). Therefore, there are three more sub-factors to be discussed as follows:

9.5.7.1. Utility benefits of ABC output (Sub-factor No. 22)

Six interviewees (75.00% of the participants) raised this sub-factor, including three interviewees at management level (CEO, DOA and USER) and three interviewees at operational level (PCO, TM2 and TM4). The interviewees, for example, said that,

Interviewee (CEO): We decided to implement this system in order to develop the accounting system.

Interviewee (DOA): The Services Department needs to use this information.

Interviewee (USER): If we compare it to the previous system, the ABC system is much better especially the details of the data. If they realise the expenses in their department they will be concern more to control their budgeting.

Interviewee (PCO): It has given us satisfactory results and good out-put.

Interviewee (TM2): We could half the costs of each department in our organisation.

Interviewee (TM4): I understood the benefits of ABC; I mean the clear picture about the cost of service, after I attended the seminar.

³ Innes, J. and Mitchell, F. (1996, p. 27) stated that the benefits of ABC such as provides more accurate product cost, relevant to managerial decision-making at the strategic level, relevant for cost management and performance assessment at an operational level, and potential to improve cost estimation.

It is clear whether TOT can gain more benefits from this project in terms of the developing of their accounting system, budgeting control, the cost in each division and department. However, some of the interviewees insisted that the ABC information can provide more details about costing and give TOT the satisfying results in cost information.

9.5.7.2. ABC system could give clearer picture of the cost of services (Sub-factor No. 29)

Five interviewees (62.50% of the participants) raised this sub-factor, including two interviewees at management level (DOA and USER) and three interviewees at operational level (PCO, TM3 and TM4). The interviewees, for example, said that,

Interviewee (DOA): The cost picture was clearer. It gave us a clear picture about cost of services.

Interviewee (USER): It starts from the ground, deep down at the cost of individual activities before combining into the cost of each service.

Interviewee (PCO): We got clearer about the accurate cost of services.

Interviewee (TM3): ABC itself could help TOT to get a clearer picture of the cost of services.

Interviewee (TM4): It was quite clear in this point about the cost of services.

Clearly, the findings show that TOT could get practical benefits from ABC implementation as mentioned in Section 9.7.1. It is also apparent that they can get other benefits too, particularly more accurate cost of services.

9.5.7.3. ABC implementation led to some other developments in internal accounting systems (Sub-factor No. 15)

Five interviewees (62.50% of the participants) raised this sub-factor. Three of them are interviewees at management level (CEO, DOA and USER) and two interviewees at operational level (PCO and TM4). The interviewees, for example, said that,

Interviewee (CEO): We decided to implement the ABC system in order to develop the accounting system. It has improved but is not 100% perfect. ...

Interviewee (DOA): I agree that it's much better. Once we got all the information, made calculations and went through each activity it showed that some points were not clear, and then we had to find out what went wrong and where the problem occurred.

Interviewee (USER): I do believe that we are now developing the system well. I agree that the system is developed from time to time.

Interviewee (PCO): I think it will be perfect within two years, because we still have a problem with the reliability of some information.

Interviewee (TM4): ABC has provided more details about the cost of each department so it could make them concerned about the internal cost of their division or department.

Not surprisingly, the findings indicate that accounting systems have been developed from time to time such as some divisions and departments realised about the costs in their business units and responded positively because it would be a practical benefit after an ABC system had been implemented for while. Hence, they tried to control the budgeting and also tried to sort out problems regarding the cost of each activity in their own department. In addition, it also confirmed that they need to recheck some information, particularly the cost of activities because they might be inaccurate in some way. However, the project coordinator asserted that it would be complete in two year's time.

At this point, and as discussion above in Section 9.5.7 (9.5.7.1, 9.5.7.2, and 9.5.7.3,) and also Section 9.5. (9.5.2, 9.5.3, 9.5.4, 9.5.5, and 9.5.6), eight sub-factors were identified and supported this main factor. Obviously, the main results indicated that after an ABC system has been implemented, it could provide more accurate details of the cost of services and also provide more details about cost information. Besides this, it led to some other developments in the accounting systems (e.g. concerning budgeting in each division and department). In addition, all the information from the ABC system has been used to improve decision-making on pricing policy and also links to the competitive strategy, in order to increase effectiveness in the organisation.

9.5.8. Main Factor 8: Problems of ABC Implementation

Interestingly, even though supporters have claimed that an ABC system can deduce cost allocation inaccuracies associated with the traditional system, as well as providing benefits as previously mentioned in Section 7, however, not long after the ABC system was introduced many survey results showed that few organisations have implemented this technique. Some evidence during the early 1990s illustrated adoption rates ranging from approximately 10% of organisations in the UK and Ireland to 14% in Canada Armitage 1993; Clarke 1996; Innes 1991). Research in the UK in 1994 and 1999 showed that the consideration of the ABC system and actual adoption dropped while reported rejections of the ABC system increased over four years between the two studies that both looked at ABC adoption (Innes 2000).

Therefore, this has prompted this research to explore extensively the problem factors that could influence or be associated with ABC implementation at TOT. The findings show twenty-two sub-factors as the problems linked with ABC implementation at TOT.

However, summarising the problems raised by the interviewees involved with the ABC implementation at TOT, it is important to state that the researcher asked the interviewees “what problems do you foresee with ABC” and did not attempt to influence the interviewees. This means that in the findings on this topic the researcher has used his own judgment in classifying the interviewees’ answers into various categories based on the number of the interviewees from most to least as follows:

Table 9.5 Twenty-two problems perceived by eight interviewees

	Number of Interviewees
1. SF16: Lack of specialist technical skills required (external consultants)	7
2. SF34: Reliable data	7
3. SF19: Too much data collection	6
4. SF25: Size of organisation is too big	6
5. SF30: Lack of knowledge and training about ABC	6
6. SF40: Inadequate size of ABC team	6
7. SF12: Privatisation	5
8. SF17: Time-consuming	5
9. SF43: Choice of activities and difficulty of identifying activities	5

10. SF44: Difficulty of identifying cost drivers	5
11. SF21: Poor quality of information	4
12. SF41: Resistance to new cost accounting system	4
13. SF42: Increased workload	4
14. SF47: Standard forms for data collection too complicated	4
15. SF18: Lack of experience among ABC team members	4
16. SF50: Behavioural problems	3
17. SF51: Lack of staff time (None of the team work full-time on ABC project)	3
18. SF52: Limitation of frame-time for ABC project	3
19. SF28: Lack of staff motivation	2
20. SF46: Other routine job was given priority over ABC	2
21. SF49: Complexity of ABC implementation procedure	2
22. SF54: High expectations of ABC implementation	1

The researcher categorises these problems into three levels as follows:

- High Significance Level (HSL): this means that if a number of the participants, between 6-8, perceive this problem then it must be of serious concern and demands in-depth investigation.
- Moderate Significance Level (MSL): this means that if a number of the participants, between 3-5, perceive this problem then it is a concern and requires investigation.

- **Low Significance Level (LSL):** this means that if a number of the participants, less than 2, perceive this problem then it may be identified as having no significant correlation with the ABC implementation process.

High Significance Level (HSL): Table 9.5 showed that there were six sub-factors identified as HSL problems, including (1) lack of specialist technical skills required (consulting staff), (2) reliable data, (3) too much data collection, (4) size of organisation is too big, (5) lack of knowledge and training about ABC, and (6) inadequate size of ABC team.

Seven interviewees listed “a lack of special technical skills required (consulting staff)” in two ways. The first view, four to five of the interviewees at operational level indicated that external consultants gave them advice step by step on how to implement the system and also helped the team to sort out problems during the ABC implementation from time to time. Moreover, one interviewee at this level suggested that “the external consultants had no idea about our business and our organisation”. However, it could be stated that there was a positive view from the ABC team about the external consultants because the team insisted that the external consultants helped them a lot to implement procedures. Another view, expressed by two interviewees at management level was that they wondered if the external consultants had sufficient skills for the project. Apart from this, there seemed to few constructive views from the management. It is possible to declare that the external

consultants had a limitation of skills, poor experience, and also they may not have had a understanding of this business.

In addition, seven interviewees mentioned the same idea that the data was not correct because the data was impossible; hence, the reliability of the data must inevitably be evaluated. However, there is more discussion about this area in Section 6.9.

Not surprisingly, five of the eight interviewees confirmed that there was a lot of information from the data collection procedure. Indeed, one interviewee (CEO) went so far as to say that “after privatisation, we may have to collect data because of the changing of the organisation structure”. In fact, many survey results show that “ABC involves gathering a lot of data and doing a lot of finding out about what goes on in the business” (Cobb 1992). Moreover, it is possible to state that this problem is related to the size of the organisation, namely the “size of the organisation is too big”, as pointed out by six of the interviewees. Obviously, two problems as mentioned above seemed to apply to any organisation getting started in implementing a new system, particularly, an ABC system. It would occur more or less since it depends on the complexity of the business process in each organisation.

Most surprising to the interviewees was the lack of knowledge and training about ABC. Six interviewees stressed that they had no idea about ABC systems, even though they attended

the training and seminar program about ABC systems. Indeed, one of the interviewee (TM3) said that “I had no chance to attend any training or seminar” and another (TM4) went so far as to say that “my knowledge about ABC was not good enough for this job”. In fact, as Compton has suggested, training is crucial for effective implementation, execution, use, and acceptance of an ABC system. Training is an ongoing process occurring throughout the life of a project (Compton 1996). Hence, it is important to state that TOT did not provide the implementation team adequate and continuous training.

Moreover, six interviewees referred to the number of members in the implementation team. The team (PCO and TM 1-4) said that ten staff was selected as the ABC team which was not enough for the project if compared with the amount of work involved. In addition, one interviewee at management level (USER) remarked that “TOT really needs more staff for this project”. Frankly, the number of implementation team members depends on the size of the organisation and amount of work involved. However, it is apparent that no previous research has indicated exactly how many employees are needed per team. For example, Cooper suggested that it will typically be four people for such a team (Cooper 1990). Innes and Mitchell (1991) stated that there should be a three man accounting team (part-time) with systems support (Innes 1991). O’Guin said that there should be three to five people (O’Guin 1991). Grieco and Pilachowski also indicated that six to eight people should serve on the team (Grieco 1995). Meanwhile, Bruesewitz and Talbott stated that implementing ABC in

complex organisations requires six full-time employees for this kind of project (Bruesewitz 1997).

Moderate Significance Level (MSL): Table 9.5 showed that there were 12 problems at this level, as perceived by the interviewees, including (1) privatisation, (2) time-consuming, (3) choice of activities and difficulty of identifying activities, (4) difficulty of identifying cost drivers, (5) poor quality of information, (6) resistance to new cost accounting system, (7) increased workload, (8) standard forms for data collection too complicated, (9) lack of experience among ABC team members, (10) behavioural problems, (11) lack of staff time (none of the team work full-time on ABC project), and (12) limitation of frame-time for ABC project.

The implementation team encountered several problems while conducting the ABC implementation. Five interviewees (CEO, DOA, TM1, TM2 and USER) stressed the problem of the impact of the ABC system on the organisation structure because of privatisation. They emphasised that TOT is on the way to privatisation therefore the organisation structure is undergoing much change. As a result, it is important to note that it is unavoidable for change to occur to some activities.

The time-consuming nature of the new procedures was mentioned by five interviewees. Most of the interviewees at management level (CEO, DOA and USER) expressed the opinion that that it took time to get appropriate output and some of the ABC team (TM1 and TM2) stated that each process consumed a lot of time, and some processes took 2-3 months to get the job done. It is not surprising that this problem was mentioned, since it happens in most cases of implementing ABC. For example, Innes, and Mitchell (1991) suggested that “clearly, the adopting of ABC took time” (Innes 1991). Cobb et al. remarked in their research findings in 1992 that “ABC seems very time-consuming for accountants” (Cobb 1992). Besides these instances, Bruesewitz and Talbott stated that implementing ABC in complex organisations is both costly and time-consuming (Bruesewitz 1997).

Furthermore, “choice of activities and difficulty of identifying activities” was one of the problems from the implementation procedure in the organisation, as mentioned by five interviewees at operational level. In addition, the CEO herself stated that “it was not easy to determine the activities and also the selecting of cost drivers for a big organisation such as TOT”. Also one interviewee at this level (USER) said that “there are still some drawbacks about cost driver classification we need to recheck”. Three interviewees at operation level (PCO, TM1 and TM2) confirmed that it was very difficult to classify the cost drivers suitable for each of the activities. However, one interviewee (TM4) emphasised that “the problem came from having a massive amount of data at hand”. Not surprisingly, those problems as

mentioned earlier may be related to other problems such as “poor quality of information”. It was mentioned by four interviewees, two interviewees at management level (CEO and DOA) and two interviewees at operational level (PCO, and TM4) that the system is not completely perfect and the results do not reflect a clear picture of the cost of services because of the quality of the data from the data collection and its reliability.

Although the ABC systems were still at a relatively early stage of their development at that time, the ABC team (four from five of the ABC implementers) raised the problem of the impact of the ABC system on the organisation culture. There was “resistance to a new cost accounting system” because some thought that the ABC system seemed to be looking for mistakes in their jobs and also that it meant auditing the employees more than implementing a new accounting system. Moreover, four interviewees (USER, PCO, TM2 and TM3) stated that ABC seems to mean an increased workload for them. In turn, the researcher is able to identify this as one of the problems that occurred in this organisation.

Four from five of the ABC implementers also emphasised the problem of the “standard forms for data collection being too complicated”. However, this problem was encountered while conducting the data collection procedure. Despite this problem, the implementation team attempted to resolve this from time to time to ensure that the right information was acquired as discussion in Section 9.6.

Additionally, although the ABC team itself has a very good educational background, the findings show that the ABC team still suffered some problems, as mentioned by three interviewees at operation level (TM1, TM2 and TM3). Clearly, as shown in Table 9.1 and 9.2, the findings indicate that the ABC team members have been working at TOT for between 7-20 years, however half of them have only ever worked in the department of accounting. Hence, it can be stated that they do not have work experience in other departments within the organisation. In these circumstances it can identify that this problem is a result of “lack of experience among ABC team members”.

Another surprise to the interviewees was the problem of “behavioural problems”. Clearly, two interviewees at operational level (TM2 and TM3) stressed that some staff did not like any change or hard work and also some of them did not want to be involved. Indeed one of the interviewees at management level (USER) went so far as to say that “it takes time to change staff’s attitude to understand and accept a new system such as the ABC system”.

Interestingly in this particular case the ABC team (TM2, TM3 and TM4) mentioned that none of the team members worked full-time on the ABC project. Of course, the team have permanent jobs (routine jobs); the ABC project is only one part of their job. In this case, it can be stated that “lack of staff time” is one of the problems that occurred in the organisation. Besides this, they also mentioned that this project was too short because the top management

wanted the project output as quickly as possible. One of the team (TM4) confirmed that “the project coordinator said get this job done as quickly as we can”. Hence, the “limitation of frame-time for ABC project” is certainly a problem in this organisation.

Low Significance Level (LSL): The remaining problems identified at this level were: (1) lack of staff motivation, (2) other routine jobs were given priority over ABC, (3) complexity of ABC implementation procedure, and (4) high expectations of ABC implementation.

The ABC team encountered several problems while conducting the ABC implementation. Insufficient personnel involved with the ABC implementation was one of the problems as mentioned earlier, however another problem was lack of staff motivation. It was mentioned by two interviewees at management level (DOA and USER) and one of the interviewees (DOA) also cited how this problem might come from increasing staff workload. Moreover, this problem may be related to another problem, namely “other routine jobs were given priority over ABC”, as expressed by two of the ABC team (PCO and TM1).

Two interviewees at operational level (TM1 and TM2) stated that ABC is not difficult to understand in the seminar-room but in practice it was very complicated to do the job. Therefore, it can be stated that this “complexity of ABC implantation procedure” was another problem that occurred at TOT. Finally, the last remaining problem was “high expectation of

ABC implementation” as quoted by one interviewee at management level (USER). Frankly, this is a very good point from the outsider who has to use the output of this project.

At this point, Table 9.5 shows that there were six sub-factors identified as high significance problems, as discussion above. It is important to note that those problems must be seriously considered and given in-depth investigation in order to understand why the ABC system has not provided as good output as expected. Nevertheless, there were fifteen moderate significance problems perceived by eight interviewees. It is important to say that those problems have to be addressed and investigated because it may be that the system did not achieve the objectives partly because of those factors. Also, there were ten low significance problems perceived by eight interviewees. On balance, those factors have been categorized at a low significance level and have no significant correlation with the ABC implementation process at TOT.

9.5.9. Main Factor 9: Level of progress of ABC implementation

The Krumwiede Model, adapted from the IT stage model, based on organisational change to the implementation of ABC, there were six stages of the ABC implementation process including (1) initiation, (2) adoption, (3) adaptation, (4) acceptance, (5) routinisation, and (6) infusion (Krumwiede 1997). Apart from this, the interviewees were asked about the level progress of ABC implementation based on this model. However, it is a significant point to

note that the researcher was very surprised, finding that the interviewees had no idea about this model at all. Hence, the researcher spent approximately half an hour explaining this model using the same table as the one shown in Table 6. Despite this explanation however, two interviewees at management level (DOA and USER) still confirmed their answer as “they could not classify” and also they were quoted saying that it was “very far from the complete stage”. One interviewee at operational level (TM3) answered that “I have no idea, because I am quite new in relation to this project”. Indeed, explaining the model was really worthwhile because some interviewees (CEO, PCO, TM1, TM2, and TM4) became more confident in answering this question, as shown in Table 9.6.

Table 9.6 Level of progress of the ABC implementation at TOT

Stage of the Implementation	Percentage of the progression at each step (100%)	Evaluate by the participants (Total = 100%)							
		CEO	DOA	USER	PCO	TM1	TM2	TM3	TM4
Stage 1: Initiation	16.66%								
Stage 2: Adoption	33.32%								
Stage 3: Adaptation	50.00%	50%	Can not tell	Can not tell	50%	50%		No idea	
Stage 4: Acceptation	66.64%								
Stage 5: Routinisation	83.30%								
Stage 6: Infusion	100.00%								

Note: This table has been adapted by the researcher, based on Krumwiede Model (1997).

At this point, and as shown in Table 9.6, using the Krumwiede Model (1997), it is possible to classify the stage of ABC implementation at TOT as the “adaptation” stage as mentioned by three interviewees (CEO, PCO and TM1). Besides this, the researcher gained a positive outlook, exactly the same idea as two interviewees (TM2 and TM4) that the ABC implementation at TPC is going to reach the “acceptance” stage in the near future.

9.6. Summary

The results of this case study have obvious implications for ABC implementation at TOT. The results contribute to TOT itself, the ABC team and the staff involved. The summary of this case study is provided in terms of the ABC implementation at TOT. Moreover, some suggestions are also provided in this section.

Obviously, the main results indicated that after the ABC system had been implemented it could provide more accurate details of the cost of services and also provide more details about cost information. It led to some other developments in the accounting systems (e.g. concerning budgeting in each division and department). In addition, it is important to state that all the information from the ABC system was used to improve decision-making on pricing policy and also linked to the competitive strategy, in order to increase effectiveness in the organisation.

Apparently, TOT has a particular objective to increase the accuracy of the costing of services and use this application for the service department to develop its decision-making strategy. However, from the interviews it is clear that the ABC system at TOT has still not achieved this objective yet because the output of the ABC system has not yet demonstrated this capacity well enough. Under these circumstances, the researcher is trying to determine the factors that affect the output of the system. They can be classified as follows:

First of all, there are two groups of people concerned. This is the implementation team and the staff involved. The research has found that the main difficulties experienced were among the implementation team itself. It was apparent that the implementation team was selected only from the department of accounting and even though they had very good educational backgrounds as well as very good work experience within TOT over many years, however, half of the implementation team continued working only in the department of accounting. That is they have not work experience in different departments within the organisation. Apparently, TOT was not aware of this point in spite that the implementation team should be a multidisciplinary team. Moreover, the adequacy of the knowledge base of the implementation team was another issue of some concern. It was apparent that 75% of the implementation team had no prior ideas about ABC at all. After they were selected as part of the implementation team they had to attend seminars on accounting systems, including the ABC system. These seminars took place twice over a year for one to two days each. Some

team members indicated that this was too little to allow them to understand the topic. They had to learn about ABC by themselves, such as by reading or consulting with other team members, which they called “learning by doing”. It is possible to say that the implementation team was subject to a lack of sufficient knowledge about ABC. It is likely, though they received training and attended seminars regularly; the training was too short and was not sufficient for their needs.

However, in terms of “staff involved” the research has found that there were some weak points concerning the target group of staff (staff involved) who attended the seminar. The organisation has not considered the large number of staff in this organisation, a total of 22,000. They planned to provide seminars for staff in all departments and at all levels of the organisation. However, it was apparent that they could only offer this to 20% who were attendees. It is important to note one significant factor at this point: TOT realised that they had to provide seminars because these would be very useful for the implementation team. Besides this, all staff would understand what the ABC system is and the benefits it could bring. It is apparent that of the 20% of all the staff in the organisation that attended the training and seminar about the ABC system, most of these were heads of divisions or departments. However, it is clear that a majority of the staff still do not understand the ABC system. Moreover, the organisation did not set priorities for who should have been selected to attend seminars first. Apparently, the organisation has been concerned merely with the

number of seminar attendees rather than about qualitative selection in this matter. It may be that the system did not achieve the project objectives partly because of this factor. Finally, in these circumstances it is important to note that not only lack of knowledge but also lack of training and seminar must be considered as the major factors affecting ABC implementation at TOT.

The next step involved design and data gathering. This phase was broken down into the stages of identifying (through interviews) the major activities performed by the organisation, determining the cost of each activity, identifying what drove the costs of those activities, and then determining the quantities of each cost driver associated with each product. Here, the researcher found that the implementation team experienced difficulties in data collection processes, particularly due to the standard forms that interviewees had to fill in. Moreover, the implementation team had no interviewing experience at all. In other words, they had to conduct interviews without any specialist skills or experience. The next question arising at this point is of the quality of the data gathered. Some team members confirmed that they had problems with the reliability of the data. Hence, it was possible to say that the output (e.g. identifying the activity, selecting cost drivers) was inaccurate. However, interviewees confirmed that this difficulty has been reported to top management.

In addition, the implementation team confirmed that they spent several months meeting to determine the “main activities” and “cost drivers”. They also reported their findings and discussed the problems encountered to top management. After this point, the implementation team should have been able to establish the “Activity Dictionary” for TOT as the output of the system at this stage. However, they confirmed that while it has been produced it is not yet completed. Some team members said that they found more than 1,000 activities at the first stage. After the progress meetings, they classified these and determined that there were 264 main activities. In addition, TOT is going to be transformed from a Thai State Enterprise into a public company and because of this the implementation team confirmed that they have to collect new data and that some activities may be changed because the organisational structure is in the process of being changed.

Obviously, the computer systems were upgraded to support the ABC system and to operate as a stand-alone system. The computer software SAP R/2 was selected on the recommendation of the consulting company who provided training and seminar programs for the ABC team during their one-year contract. However, it is apparent that the new PCs were not good enough. Moreover, the ABC team confirmed that the training or seminar sessions were good enough and that it was quite simple to operate this software. The capacity of the PCs may be a significant factor leading to the success or failure of ABC implementation in this organisation.

Furthermore, twenty-two problems were found from the ABC implantation at TOT. However, there were six sub-factors identified as high significance problems (HSP), including (1) lack of specialist technical skills required (consulting staff), (2) reliable data, (3) too much data collection, (4) size of organisation is too big, (5) lack of knowledge and training about ABC, and (6) inadequate size of ABC team. It is important to note that these problems must be seriously considered and given in-depth investigation in order to understand why the ABC system has not provided output as good as expected. Moreover, twelve moderate significance problems (MSP) were found, including (1) privatisation, (2) time-consuming, (3) choice of activities and difficulty of identifying activities, (4) difficulty of identifying cost drivers, (5) poor quality of information, (6) resistance to new cost accounting system, (7) increased workload, (8) standard forms for data collection too complicated, (9) lack of experience among ABC team members, (10) behavioural problems, (11) lack of staff time (none of the team work full-time on ABC project), and (12) limitation of frame-time for ABC project. It is important to say that these problems have to be addressed and investigated because it may be that the system did not achieve the objectives partly because of those factors. Finally, the remaining problems identified as low significance problems (LSP) were (1) lack of staff motivation, (2) other routine jobs were given priority over ABC, (3) complexity of ABC implementation procedure, and (4) high expectations of ABC implementation. However, it is possible to mention that those factors have no significant correlation with the ABC implementation process at TOT.

Support from TOT's top management did not amount to the full support that they claimed it did since some insisted that there were limitations to it. Support from top management is always critical, this support must not only be financial, but also consist of providing leadership, adequate personnel resources, and additional support from an outside computer firm. According to the research findings, top management support, commercial software, training in using ABC, resource adequacy, and providing education about the ABC system were seen as the most important factors influencing the success of ABC in this organisation. Much previous research suggests that an essential and key factor influencing the success of implementing ABC is top management support. Thus, it can be stated that there are several essential and key factors that might affect the ABC implementation process in this organisation. It can be suggested that the organisation should consider all of these factors in order to understand why the ABC system has not provided output as good as expected.

Finally, using the Krumwiede model (1997) it is important to state that the ABC implementation at TOT has not reached the final stage yet. It is classified as at the "adaptation" stage; however it is going to reach the "acceptance" stage in the near future.

Chapter 10

Comparison of Activity-Based Costing Systems in the Four Case Studies

**The precondition for writing well is being able to write badly
and to write when you are not in the mood.**
Peter Elbow

10.1 Introduction

According to the literature review, ABC has been implemented and investigated in many countries across the world (Kaplan 1997). Favere-Marchesi (2001 p. 16) stated that activity-based costing (ABC) is one of many such tools that would help Thai companies regain their competitive edge in an ever-growing world of contenders. Moreover, in their recent research of 2001, Morakul and Wu (2001 p. 142) mentioned that “the activity-based costing (ABC) system of the USA has been adopted by organisations in Thailand and elsewhere.”

This chapter examines the design of the four case studies, compares the factors which influence the implementation of ABC, and evaluates the implementation process of ABC to make suggestions for improvement. Finally, a conceptual framework for ABC implementation in Thai organisations, particularly Thai State Enterprise (TSEs), is established. Therefore, it is hoped that the results of this research will be valuable to Thai

organisations in improving their efficiency and effectiveness, especially, Thai State Enterprises (TSEs).

10.2 Comparison of the four models' specifications

From the four case studies, a large number of sub-factors were classified (see Chapter 6, Table 6.3-6.4; Chapter 7, Table 7.3-7.4; Chapter 8, Table 8.3-8.4; and Chapter 9, Table 9.3-9.4); however, those sub-factors were able to be condensed into nine main factors (1) Top management support, (2) Computer systems, (3) Education and training, (4) ABC team, (5) Objectives of ABC implementation, (6) ABC implementation process, (7) Benefits of ABC implementation, (8) Problems with ABC implementation, and (9) Level of progress of ABC implementation. Apart from this, it is important to note that subsequent to the in-depth investigation in the four case studies, based on the main results of this research, a conceptual framework has been developed for ABC implementation in Thai organisations, focusing on Thai State Enterprises (TSEs). Finally, the four case study organisations' ABC model specifications can be listed in accordance with the following characteristics (see Table 10.1).

Table 10.1 Four models' specifications comparison

Description	Thai State Enterprise (TSEs)			
	TPC	MEA	EGAT	TOT
Nature of organisation	Production	Merchandise	Power Generating	Telecommunication
Type of consultation	Hired external consultant	In-house training and hired external consultant later	In-house training and hired external consultant	Hired external consultant
Computer systems	PC stand-alone system	PC stand-alone system	PC stand-alone system	PC stand-alone system
Software support	Microsoft Excel	Microsoft Excel	WALKER (Fully integrated system)	SAP R2/3 and Microsoft Excel
Education and training	Occasional	Occasional	Occasional	Occasional
Implementation team	Accountants from the department of accounting	Accountants from the department of accounting	Accountants from the department of accounting	Accountants from the department of accounting
Main objectives of ABC implementation	Cost of product	Cost of service at customer service department in 14 district offices	Re-engineering and improving performance measurement	Cost of service
Formalised project scope	Whole organisation	Pilot project	Whole organisation	Pilot project
Data collection instrument	Standard forms	Standard forms	Standard forms	Fact-to-face interview and standard forms
Benefits of ABC implementation	9 items	6 items	5 items	8 items
Problem of ABC implementation	12 items	13 items	10 items	22 items
Number of activities at present	400 activities	44 activities	1020 activities	264 activities
Implementation stages	1. Initial 2. Adoption 3. Adaptation 4. Acceptance	1. Initial 2. Adoption 3. Adaptation 4. Acceptance 5. Routinisation	1. Initial 2. Adoption 3. Adaptation 4. Acceptance 5. Routinisation 6. Infusion	1. Initial 2. Adoption 3. Adaptation

Note: Data drawn from the findings of the four case studies

According to the comparison of the four models' specifications as shown in Table 10.1, a conceptual framework has been developed. It is used to describe the ABC implementation in Thai State Enterprises (TSEs). The nine main factors are acknowledged in the ABC implementation step by step, in order to offer guidelines to improve the efficiency and effectiveness of ABC implementation in Thai organisations, and in particular in Thai State Enterprises (TSEs). An entire conceptual framework, as shown in Figure 10.1, is discussed in the following sections.

10.2.1 Top management support (see A and B in Figure 10.1)

Indeed, top management support is seen as the most important factor influencing the success or failure of any new system in an organisation (IMA 1993). Also some previous research has reported that an essential and key factor influencing success in implementing ABC is top management support¹. Clearly, Shields and Young (1989) noted that the successful implementation of cost management systems, including ABC systems, depends on this factor. Obviously, the results from the four case studies showed much the same concerning top management support (A). It can be concluded that the different degrees of top management support translated into different levels of implementation output. Again, the top management themselves must commit to offering full support in terms of financial support,

¹ "Top management support" is one of the factors identified by Shields and Young, 1989. See "A Behavioral Model for Implementing Cost Management Systems" *Journal of Cost Management*, Winter, pages 17-21.

leadership, adequate personnel resources and additional support from computer systems for the entire implementation project both strongly and continuously.

Additionally, the results from the four case studies lead to one question inevitably being raised – “Does the top management need to hire external consultants or use internal staff to implement this system?” Based on the findings of this study, it is possible to state that top management should handle this type of project by hiring an external consultant **(B)**. The reason to support this suggestion is that ABC information involves the employees directly; it will categorise the entire processes of their routine job into activities and classifies these activities into two types as either value-added activity or non value-added activity. Obviously, no one wishes to accept that some aspects of their job are non value-added activities and so where jobs need to be cut, surely, the employees will oppose this and so there will be resistance to the new system. This is exacerbated in cases where the project is handled by the organisation’s internal staff. This project requires a great deal of respect from the people involved in order to resolve problems of this nature. Therefore, it is possible to recommend that organisations should hire external consultants because the staff involved will show higher respect to outsiders such as external consultants than to their own staff. Besides this, it will be very useful for the project to reduce staff resistance as one of the most commonly faced problems.

Finally, it may be suggested that this factor (top management support) is the most significant factor to implement an ABC system in TSEs, on the basis that the top management must hire an external consultant to handle this project and commit to offering strong continuous support in order to get the finest possible output from this project in the end.

10.2.2 Computer systems (see C and D in Figure 10.1)

As mentioned earlier in Section 10.2.1, it is obvious that the top management has to make a decision about the computer systems, both hardware and software, used to support an ABC project. In terms of the computer hardware, organisations can use their current PCs if these still work properly and provided that their capacity is sufficient. In terms of computer software, it depends on the objectives of the organisation, whether they expect to integrate into the computer mainframe system or maintain it as a stand-alone system after full ABC implementation. In either case, a clear plan must be in place from the beginning.

Indeed, the results from two of the case studies indicate that the top management were not entirely concerned about this topic. After the ABC system had been implemented, a year later, the top management decided to integrate the ABC information into the computer mainframe, or decided to hire an external consultant to implement the new management system, using commercial software, for example SAP, as recommended by the external consultant. The implementation teams in two cases found that the current ABC information,

using Excel was unable to support or be integrated into the new computer software. The two organisations suffered from this problem because they developed their computer software based on Excel operated by their internal staff. It was not commercial software that can be used to support more varied applications such as providing comprehensive ABC information.

From this it is possible to conclude that it is the full responsibility of top management to decide matters in this area. It should be a stand-alone system **(C)**, or fully integrated with the mainframe system, and also it should be implemented using Excel **(D)**, or special commercial software. Finally, it should be emphasised that Thai State Enterprises (TSEs) should decide to implement ABC systems using commercial software in the first place because most Thai State Enterprises (TSEs) are big organisations which commonly have up to 20,000 employees. Hence, an ABC project will involve a large amount of information; it needs the proper commercial software and a capable external consultant team to handle such a project to get the best output possible.

10.2.3 Education and training (see E in Figure 10.1)

In general, providing staff in the organisation with new knowledge is the responsibility of top management. Improving staff understanding is one of the key factors in increased effectiveness in the organisation. Moreover, another important element of a successful implementation of ABC is training (Compton 1996). However, it is very important to make it

clear that there are two groups of employee that need to attend the training and seminars programs about ABC. The first group is staff that are to be the participants or respondents as the sample group of an ABC project; the other group is made up of staff who are to be an implementation team (ABC team). It is not necessary for them to become ABC experts, since the first group (participants or respondents as the sample group) only need to understand the need for ABC, its benefits and its key concepts, and also understand the significance of the data they provide. It is a critical factor that incorrect answers given to questions asked by the implementation team (ABC team) can lead to an improperly designed system. Again, a lack of understanding of the proper input required once the system is operational will lead to inaccurate costs (Compton 1996).

The second group, the implementation team (ABC team), those actually designing and implementing the system, need to develop a thorough understanding of both the “how” and “why” of ABC. This is because ABC is as much an art as it is a science; it is not enough to only master the mechanics (Compton 1996). The implementation team (ABC team) must comprehend the various approaches, level of scope, and system mechanics available in order to select and integrate those approaches that will result in the most cost-effective system for their organisation. Clearly, those who will be providing input for the system must understand the importance of the data they provide (IMA 1993). Hence, training and seminar programs,

designed for the special needs of each major group of staff should be provided to ensure the accuracy of input.

Clearly the results of the four case studies indicated that the organisations' employees who were involved with the ABC projects, did not receive enough basic knowledge about the ABC system, hence it is a serious matter about this area regarding how they could conduct a special project such as ABC implementation without sufficient knowledge. It is clear that employees who are going to be involved with the ABC project indeed need regular training and to attend seminars about ABC systems (E), in order to make sure that they have sufficient knowledge to do the best job possible.

10.2.4 ABC team (see F in Figure 10.1)

Some ABC researchers have suggested that it is not necessary for all team members to have a financial or accounting background. In fact, it is sometimes negative for a team to have a traditional cost mindset (Grieco 1995). Cooper (1990) noted that several important criteria were identified for selecting team members, such as being intelligent and flexible in their approach to problem solving, and also he noted that knowledge of cost accounting was not considered criteria for selection although it was felt that at least one member of the team had to understand the firm's existing accounting systems. Furthermore, to achieve the objectives of an ABC project, the implementation team should include members from several

disciplines other than accounting or finance (Cooper 1990). It has also been suggested that the team should include representatives from manufacturing, marketing, management information systems (MIS) and accounting. Involving members from across the organisation ensures a broader acceptance due to better communication, transfer of knowledge and awareness of the system's benefits (O'Guin 1991).

It is apparent from this study that none of the four organisations conducted the ABC project with a multidisciplinary team; have indeed, team members were from the department of accounting only. This was the cause of some difficulties in conducting this project such as staff resistance to the new accounting system and their avoidance of supporting some information and so on. It is possible to say that a multidisciplinary team would help them to sort out those difficulties as mentioned above by using two-way communication among the implementation team and various other working groups. Finally, it has also been strongly recommended that the implementation team (ABC team) must be a multidisciplinary team (F).

10.2.5 Objectives of ABC implementation (see G in Figure 10.1)

Unsurprisingly, before embarking on any project, it is very important to know what the project is expected to accomplish. A project to implement ABC is no exception. Without a fairly precise definition of its objective the project will result in an ABC system designed to

solve the general problems of some hypothetical organisation, not the specific problems of the real organisation. Again, without a clearly stated objective, the ABC system resulting from the project will not meet the needs of the organisation in a cost-effective manner (IMA 1993). Clearly, the findings of this study indicated that the main objectives have been established precisely in four organisations (**G**). However, it is important to realise that Thai State Enterprises (TSEs) should verify their real needs as the main objectives of the ABC project appropriately, in order to use as these as guidelines for the project planning procedure. Again, this must be done in the first place to make clear what the organisations expect from the project because most Thai State Enterprises (TSEs) are large organisations and involve a long history, therefore, it is not simple to implement any kind of new system, especially an ABC system. Obviously, this type of project involves a large budget to cover the costs of external consultants, commercial software etc., and also it directly involves a great number of people. Besides, the time-consuming nature of such a project is one of the most significant factors, which inevitably has to be considered. Furthermore, it is possible to assume that this project may impact on the behaviour of the organisation's people and culture in some ways.

10.2.6 ABC implementation process (see H in Figure 10.1)

Based on the findings of the four case studies, a theoretical framework for ABC implementation in Thai State Enterprise (TSEs) is developed. It involves five main factors as

mentioned earlier in Section 10.2.1, 10.2.2, 10.2.3, 10.2.4, and 10.2.5. Therefore, after the investigation in the four case studies of this study, it is possible to conclude that the implementation procedure for Thai State Enterprise (TSEs) should be established step by step as follows:

- **Step 1:** The project should be conducted by hiring an external consultant, as mentioned in Section 10.2.1.
- **Step 2:** The project should be implemented using commercial software, as mentioned in Section 10.2.2.
- **Step 3:** The project should provide employees with sufficient knowledge about the ABC system, in order to ensure they are properly prepared to execute the project, as mentioned in Section 10.2.3.
- **Step 4:** The project should select an implementation team that is a multidisciplinary implementation team, as mentioned in Section 10.2.4.
- **Step 5:** The project should verify the main objectives of the project appropriately, in order to use these as the guideline for the project planning, as mentioned in Section 10.2.5.

In addition, it is very important that the organisation's top management are committed to giving strong and sincere support to the entire process from Step 1 to Step 5 with no exceptions or excuses, in order to get the finest possible outputs from this project.

10.2.7 Benefits of ABC implementation (see I in Figure 10.1)

In fact, as the literature review recorded, Kaplan (1997) noted that ABC has been implemented and investigated in many countries across the world since the mid 1980s. Many researchers have suggested that ABC increases the accuracy of cost allocation to products (Cooper and Kaplan 1991; Mitchell et. al. 1994). It is also believed that greater processing of the cost information and subsequent realisation of accurate and relevant cost measurements are beneficial for decision making (Hicks 2005). Mitchell (1994) also advocates how decision making is enhanced by the cost information that ABC provides, as new types of information are able to be viewed (Mitchell 1994). In general cases, managers who understand the ABC system realise that accurate, relevant cost data enables them to identify and achieve innovation and continuous improvement; these are the benefits they can take from an ABC implementation (Cokins 1992). The use of an ABC system in both manufacturing and non-manufacturing firms is advocated to be valuable. Moreover, an ABC system can help an organisation to increase the accuracy of its costing of services, improve decision-making on pricing policy for the service department, increase effectiveness in the organisation, link to competitive strategy, and increase competitiveness (Innes 1996). Apart from this, as mentioned above about the benefits of ABC systems, it is one of the main reasons that some organisations really want to implement this system to obtain those benefits, even Thai organisations and especially Thai State Enterprises (TSEs) (Robinson 2002).

Interestingly, from the investigation of the four case studies, it is absolutely clear that the organisations could get those benefits from ABC implementation (I) as revealed in Section 6.5.7 in Chapter 6, Section 7.5.7 in Chapter 7, Section 8.5.7 in Chapter 8, and Section 9.5.7 in Chapter 9. Furthermore, even though each organisation has the potential to gain various benefits from the project it is important to note that all of the benefits are tangible outputs at the end of the project, therefore organisations should be concerned about the inputs at the first stage of the implementation process, including top management support, computer systems, sufficient knowledge about ABC, the implementation team, and clear and concise objectives. If those inputs have been moved forwards properly it is possible to say that the tangible outputs (all the benefits) should demonstrate the best outputs and reliability in the end.

10.2.8. Problems of ABC implementation (see J in Figure 10.1)

First of all, even though supporters have claimed that an ABC system can reduce cost allocation inaccuracies associated with the traditional system, as well as provide benefits as previously mentioned in Section 10.2.7, not long after the ABC system was introduced a lot of survey results indicated that few organisations have implemented this technique. Some evidence during the early 1990s illustrated adoption rates ranging from approximately 10% of organisations in the UK and Ireland to 14% in Canada (Armitage 1993; Clarke 1996; Innes 1991). Research in the UK in 1994 and 1999 showed that the consideration of the

ABC system and actual adoption dropped while reported rejections of the ABC system increased over four years between the two studies that both looked at ABC adoption (Innes 2000). Therefore, this research investigates the problem factors that could influence or be associated with ABC implementation in Thai organisations, particularly Thai State Enterprises (TSEs).

Summarising the problems raised by the interviewees involved with the ABC implementation in four Thai organisations, it is important to state that the researcher asked the interviewees “what problems do you foresee with ABC” and did not attempt to influence the interviewees. This means that in the findings on this topic the researcher has used his own judgment in classifying the interviewees’ answers into various categories based on the four organisations as shown in Table 10.2, as follows:

Table 10.2: Summarise of the problems from ABC implementation in the four case studies

Type of the problem	TPC			MEA			EGAT			TOT		
	H	M	L	H	M	L	H	M	L	H	M	L
1. Privatisation	/				/		/				/	
2. Organisational issues or behavioural problem	/				/		/				/	
3. Lack of staff motivation	/											/
4. Choice of activities and difficulty of identifying activities		/									/	
5. Poor quality of information		/					/				/	
6. Too much data collection		/			/					/		
7. Reliable data		/			/			/		/		
8. Inadequate size of ABC team		/								/		
9. Lack of information resources		/			/							
10. Lack of knowledge and training about ABC		/			/		/			/		
11. Difficult to identifying cost drivers		/										
12. Increased workload		/		/			/				/	
13. Resistance to new cost accounting system				/			/				/	
14. Lack of staff time					/			/			/	
15. Changes in internal staff					/							
16. Time-consuming					/		/				/	
17. Complexity of business process of the organisation					/		/					
18. Revised the standard forms						/						
19. Lack of specialist technical skills required										/		
20. Size of the organisation is too big										/		
21. Standard forms are too complicated											/	
22. Lack of experience among ABC team members											/	
23. Limitation of frame-time for the ABC project											/	
24. Other routine jobs were given priority over ABC												/
25. Complexity of ABC implementation procedure												/
26. High expectation of ABC implementation												/

Note: Data drawn from the findings of the four case studies

According to Table 10.2, the findings from the four case studies, the researcher categorises these problems into three levels as follows:

- **High Significance Level (HSL):** this means that if a number of the participants, between 6-8, perceive this problem; this problem must be of serious concern and demands in-depth investigation.
- **Moderate Significance Level (MSL):** this means that if a number of the participants, between 3-5, perceive this problem; this problem is a concern and requires investigation.
- **Low Significance Level (LSL):** this means that if a number of the participants, less than 2, perceive this problem, it may be identified that this problem has no significant correlation with the ABC implementation process.

It is necessary to state that the problems of the ABC implementations in the four case studies will be presented at three levels as mentioned above (see Table 10.1), in order to classify the degree of the problem that could influence or be associated with ABC implementation in each Thai State Enterprises (TSEs). The reason for this is to identify the problems that might significantly affect the ABC implementation procedure as a whole. Therefore, subsequent to the investigation it shows that those problems are different in each organisation, for example, “privatisation” some organisations identified as of High Significance Level (HSL), but some organisations identified it as of Moderate Significance Level (MSL); hence, it depended on the individual organisation. However, it is important to combine all the problems from the four case studies into one category as the main idea of this section. These problems can be classified into various categories based on the number of the findings in the four case studies from most to least, as shown in Table 10.3 as follows:

Table 10.3: Summarise of the problems from ABC implementation (based on the number of organisations which recognised the problem)

Type of problem	Number of organisations found the problem
1. Privatisation	4
2. Organisational issues or behavioural problem	4
3. Too much data collection	4
4. Reliable data	4
5. Lack of knowledge and training about ABC	4
6. Increased workload	4
7. Poor quality of information	3
8. Inadequate size of ABC team	3
9. Lack of information resources	3
10. Resistance to new cost accounting system	3
11. Lack of staff time	3
12. Time-consuming	3
13. Lack of staff motivation	2
14. Choice of activities and difficulty of identifying activities	2
15. Changes in internal staff	2
16. Complexity of business process of the organisation	2
17. Lack of specialist technical skills required	2
18. Other routine jobs were given priority over ABC	2
19. Difficult to identify cost drivers	1
20. Revised the standard forms	1
21. Size of the organisation is too big	1
22. Standard forms are too complicated	1
23. Lack of experience among ABC team members	1
24. Limitation of frame-time for the ABC project	1
25. Complexity of ABC implementation procedure	1
26. High expectation of ABC implementation	1

Note: Data drawn from the findings of the four case studies

As shown in Table 10.3, it is apparent that six problems were found in four organisations, seven problems were found in three organisations, five problems were found in two

organisations, and eight problems were found in one organisation. The researcher has used his own judgment in classifying the findings, based on of the extent to which the organisations recognised each problem.

- Twelve problems were identified as “*high significance factors*” (these problems were found in three and four organisations) that might be affecting the ABC implementation in Thai organisations, particularly, Thai State Enterprises (TSEs). These are: (1) Privatisation, (2) Organisational issues or behavioural problem, (3) Too much data collection, (4) Reliable data, (5) Lack of knowledge and training about ABC, (6) Increased workload, (7) Poor quality of information, (8) Inadequate size of ABC team, (9) Lack of information resources, (10) Resistance to new cost accounting system, (11) Lack of staff time, and (12) Time-consuming.
- Six problems were identified as “*moderate significance factors*” (these problems were found in two organisations) that might be affecting the ABC implementation in Thai organisations, particularly, Thai State Enterprises (TSEs). These are: (1) Lack of staff motivation, (2) Choice of activities and difficulty of identifying activities, (3) Changes in internal staff, (4) Complexity of business process of the organisation, (5) Lack of specialist technical skills required, and (6) Other routine jobs were given priority over ABC.

- Eight problems were identified as “*the low significance factors*” (these problems were found in one organisation) that might not be affecting the ABC implementation in Thai organisations, particularly, Thai State Enterprises (TSEs). There are: (1) Difficult to identify cost drivers, (2) Revised the standard forms, (3) Size of the organisation is too big, (4) Standard forms are too complicated, (5) Lack of experience among ABC team members, (6) Limitation of frame-time for the ABC project, (7) Complexity of ABC implementation procedure, and (8) High expectation of ABC implementation.

10.2.9. Level of progress of ABC implementation (see K in Figure 10.1)

In order to indicate the exact progress of the implementation process in each organisation it is necessary to again look for a useful and appropriate model to help to answer the question. Again, the researcher returns to the model developed by Kip R. Krumwiede in 1997 named “*Stages of ABC Implementation*” from an earlier model by Cooper and Zmud in 1990, named “A model of the Information Technology (IT) Implementation Process”. The main reason for using this model is to identify the progress of the implementation step by step, and also because the implementer can understand “what stage they are at in the implementation procedure”.

Krumwiede (1997) adapted the IT stage model developed by Cooper and Zmud (1990) based on organisational change to the implementation of ABC. Krumwiede (1997) claims that ABC

is an information technology (IT) innovation, which provides information for managers to make their decisions, as opposed to a pure technical innovation. Accordingly, managers need to comprehend the stages of the IT implementation process to implement ABC successfully. However, the Krumwiede (1997) model (**K**) describes each stage of the implementation process of ABC into six stages as follows: (1) Initiation stage, (2) Adoption stage, (3) Adaptation stage, (4) Acceptance stage, (5) Routinisation stage, and (6) Infusion stage, (Krumwiede 1997).

10.3. Summary

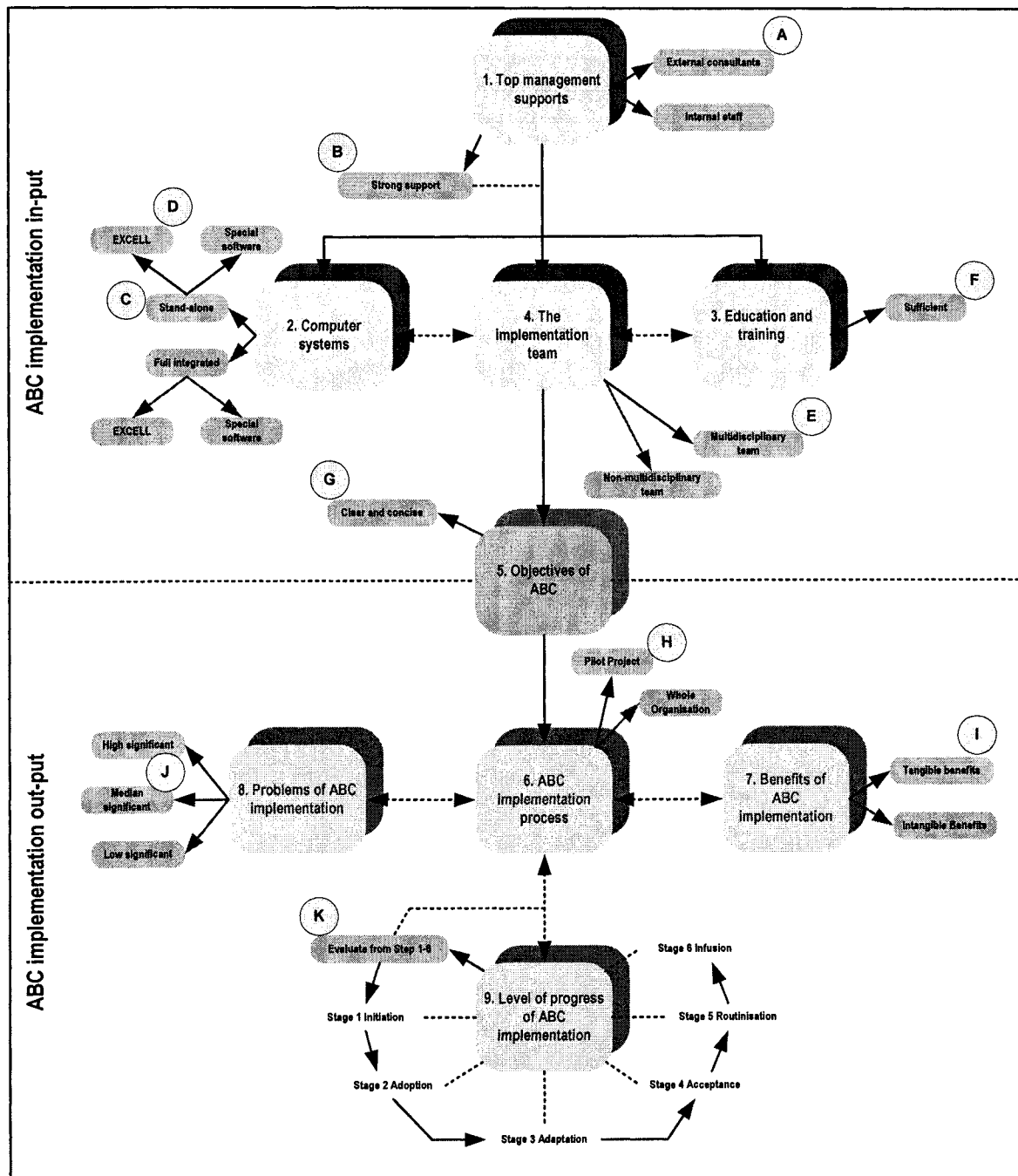
This section presents the entire process of the ABC implementation in Thai State Enterprises (TSEs), based on the findings of four case studies. This section involves nine main factors as identified in Section 10.2.1, 10.2.2, 10.2.3, 10.2.4, 10.2.5, 10.2.6, 10.2.7, 10.2.8, and 10.2.9. Apart from this, after in-depth investigation, it is possible to conclude that the implementation procedure for TSEs should be established step by step as follows:

- **Step 1:** The project should be conducted by hiring an external consultant (see **A** in Figure 10.1)
- **Step 2:** The project should be implemented using stand-alone system (see **C** in Figure 10.1)
- **Step 3:** The project should be implemented using commercial software (see **D** in Figure 10.1)
- **Step 4:** The project should provide employees with sufficient knowledge about the ABC system (see **E** in Figure 10.1)
- **Step 5:** The project should select a multidisciplinary team implementation team (see **F** in Figure 10.1)

- **Step 6:** The project should verify the main objectives of the project appropriately (see **G** in Figure 10.1)
- **Step 7:** The project should be preceded by a pilot project (see **H** in Figure 10.1)
- **Step 8:** The project should identify tangible benefits (see **I** in Figure 10.1)
- **Step 9:** The project should identify the significant problems from the ABC project (see **J** in Figure 10.1)
- **Step 10:** The project should classify its progress using the Krumwiede (1997) Model (see **K** in Figure 10.1)

In addition, it is a very important to note that the organisation's top management (see **B** in Figure 10.1) must be committed to giving strong support to the entire process from Step 1 to Step 10 with no exceptions or excuses, in order to get the best possible outputs from such a project. Finally, the researcher is able to create a conceptual framework based on this study for ABC implementation in Thai State Enterprises (TSEs) which includes 10 steps as shown in Figure 10.1.

Figure 10.1 A conceptual framework for ABC implementation in Thai State Enterprise



Chapter 11

Conclusions and Further Research

**Knowledge is the only instrument of production
that is not subject to diminishing returns.**
John M. Clark

11.1 Introduction

This chapter is divided in four sections. The first section commences with the contributions of this research and the second section explains the limitations of this study. The third section summarises the conclusions of this research, then the possibilities for further research make up the last section of the chapter.

11.2 Contributions of this Research

The literature review has shown that the ABC system emerged in the mid-1980s to meet the need for accurate information about the cost of resource demands by individual products, services, customers; it has since been implemented and investigated in many countries across the world (Kaplan 1997). The main area of contribution of this research is to the literature regarding the implementation problems of cost innovations. This research has been executed

with the aim of developing new measures for various rationale factors and is the first to empirically apply an ABC implementation process for Thai State Enterprises (TSEs).

Accordingly, Favere-Marchesi (2001, p.16) stated that activity-based costing is one of many such tools that would help Thai companies regain their competitive edge in an ever-growing world of economic contenders. Moreover, in their recent research of 2001, Morakul and Wu (2001, p.142) addressed how “the activity-based costing (ABC) system of the USA has been adopted by organisations in Thailand and elsewhere.”

Consequently, the researcher has traced the factors which influence the implementation of ABC and evaluated its implementation process to make suggestions for improvement. Finally, a conceptual framework for ABC implementation in Thai organisations, particularly Thai State Enterprises (TSEs) has been established. It is hoped that the results of this research will be valuable to Thai organisations in order to improve their efficiency and effectiveness, especially in the case of Thai State Enterprises (TSEs).

11.3 Limitations of this Research

This research has many limitations. However, the most significant limitation is that the scope of this research is limited to Thai organisations. The first objective of this research, limits it to 438 Thai organisations, covering both public and private sectors, by the use of a

questionnaire survey. Furthermore, the second objective of this research, it is limited to Thai State Enterprises (TSEs), as the public sector only. Apart from this, some information is strictly confidential and cannot be made public in any way. Besides this, the analysis is limited; while the interviews were conducted at both management and operational level, however, the number of interviewees in each of the four organisations was only up to eight people and therefore, the accuracy of the research's data is reliant on the skill, experience, judgment and ethical standards of these individuals.

Moreover, another limitation relates to the research strategy, using "case study". In general, a case study is usually conducted in a single organisation embedded in a large population. It is very difficult to draw boundaries for scope of the study with respect to exploring larger systems (Otley 1994). Moreover, the main weakness of the case study approach is that a case study requires a demanding amount of data about a small number or single units of analysis (the case) and will generally be a time consuming exercise (Yin 1994).

In addition, the field-based nature of this study implies that many irrelevant variables exist and are disorderly, for example; the comparability between the four organisations is limited in terms of implementation phase and also the organisations implemented ABC systems over different periods of time. Besides this, the perceptions of employees toward the new cost accounting system at the commencing of the implementation process may have been

different from the employees of organisations interviewed a few years after the implementation.

Considering the above limitations however, these factors have on the whole had little or no impact on the overall results of the research. The researcher believes that this research provides sufficient analysis which can be used by Thai organisations in relevant practical applications and meanwhile provides academics with useful recommendations for the design of future studies in this area. It is also worth noting that the four Thai State Enterprises (TSEs) have continued the implementation processes in their organisations although this research project does only represent a part of their ABC implementation experiences.

11.4 Conclusions of the Thesis

First of all it is important to note that there are two stages of this study, the first involved the use of a questionnaire survey which provided a clear picture of cost accounting systems in Thai organisation as a whole, and in Thai organisations which had implemented ABC systems. The major outcomes of the survey confirmed that traditional accounting systems such as standard costing, absorption costing, and variable costing could provide reliable and relevant information. Where organisations had not implemented ABC systems the following reasons were given: unsuitable, too costly, lack of knowledge and expertise. Despite these findings some Thai organisations continued to implement ABC systems, particularly in

public sector, such as Thai State Enterprises (TSEs). Significant results from the survey confirmed that Thai State Enterprises (TSEs) were not satisfied with the implementation of ABC systems in their organisations, in other words, ABC systems did not demonstrate the level of excellence in terms of the information relating to product costs and services. It was evident that these organisations had experienced difficulties in implementing ABC systems.

These results confirmed the next stage of the research in undertaking in-depth case studies to explore the reasons why ABC implementations were problematic. Four Thai State Enterprises (TSEs) were selected as case studies and using semi-structure interviews, as the main research instrument, enabled the main objective of this study to be addressed, namely to investigate the entire process of the ABC implementation in Thai State Enterprises (TSEs). In particular to identify the factors which influence the implementation of ABC, to evaluate implementation processes and to make suggestions for improvement by establishing a conceptual framework of the ABC implementation process.

Research findings identified a large number of sub-factors relevant to implementation processes in the four case studies. There were thirty-three sub-factors in the first two cases (see Chapter 6, Table 6.3; Chapter 7, Table 7.3), twenty-five sub-factors in the third case (see Chapter 8, Table 8.3), and fifty-four sub-factors in the last case (see Chapter 9, Table 9.3). These sub-factors were then condensed into nine main factors as follows: (1) top

management support, (2) computer systems, (3) education and training, (4) the ABC team, (5) the objectives of ABC implementations, (6) the ABC implementation process, (7) benefits of ABC implementations, (8) problems of ABC implementations, and (9) the stages of progress of ABC implementation.

These nine main factors were separated into two parts namely, ABC implementation in-puts, and ABC implementation out-puts (see Chapter 10, Figure 10.1). The explanation of the first part in this conceptual framework “ABC implementation in-puts” refers to resources necessary to enable the ABC implementation process, being the first step in implementing systems and includes the main factors 1-5, as shown in Figure 10.1.

From the findings it is clear that top management support (main factor 1) was the most significant factor affecting the implementation process in every case study. It is possible to conclude that top management support must be carefully considered in determining the success or failure of ABC implementations. Top management must take on the responsibility and make decisions about how to implement ABC. The findings suggest that hiring external consultants is the best approach as organisations may gain benefits in terms of reduced resistance, commitment to taking part in the process, and use of the new accounting system; these significant problems were encountered in all the case studies.

The findings identified computer systems (main factor 2) as the second main issue concerned with implementations. They suggest that computer systems should be the stand-alone type to support the project and that PC capacities should be sufficient to handle large quantities of data. Furthermore, commercial software packages should be purchased on the recommendation of external consultants.

The need for education and training is identified as main factor 3; the adequacy of the knowledge base of implementation teams is of paramount importance. Whilst implementers had some prior knowledge of ABC processes this proved to be less than adequate. Case study findings indicate that training was insufficient and as a consequence implementation teams suffered from a lack appropriate knowledge. Training of implementation teams, or the lack thereof, is a major factor in influencing success.

Main factor 4 relates to the ABC team and the personnel within the team. Significant results identified that the main difficulties arose from within the ABC team. Team members were selected from the accounting department; this was the sole criteria used in all the organisations studied. Team members had no previous experience of working in other departments and were not multidisciplinary, yet it is recognised in the literature that this is an important success factor. In most of the case studies the importance of such teams was not recognised. Multidisciplinary teams are a key requirement in ABC implementations.

The next main factor relates to the objectives of the ABC project. Main factor 5 (Objectives of ABC) falls within both parts of the conceptual framework; objectives should be established at the start of the implementation “in-put”, and in terms of the “output”, implementers need to evaluate whether or not outcomes of the implementation meet these objectives.

Main factors 1-5 are acknowledged as being significant in terms of influencing the success or failure of ABC implementations in the case studies.

The second part in this conceptual framework follows and explores main factors 6-9, as shown in Figure 10.1. Findings relating to the ABC implementation process (main factor 6), show that a “*pilot project*” should be undertaken before extending to the whole organisation. This is considered essential when implementations take place in large organisations made up of more than 20,000 staff. Issues and problems can be identified and overcome well in advance of the main implementation.

In terms of the benefits derived from the ABC implementation (main factor 7) it is necessary to state that tangible benefits should be identified after the ABC system has been implemented and should address the question “has the implementation been successful?”

Problems arising from the ABC implementation (main factor 8) should be classified in term of their levels of significance: high significant problems (HSP), moderate significant problems (MSP) and low significant problems (LSP). This classification will help implementers to manage tasks in order to best achieve the project objectives.

Main factor 9 is concerned with the development stages of the implementation process. Progress of the ABC implementation should be evaluated and if necessary implementers alerted to the need for actions to ensure success. Implementers should be aware of the implementation stages as described in Kruimwiede's (1997) model which is referred to in Chapter 2.

Based on the findings of the four case studies it is possible to conclude that ABC implementation processes for Thai State Enterprises (TSEs) should take into account main factors 1 – 9 as detailed above. Further, organisations should show strong commitment to the implementation process by adopting the conceptual framework which is described below.

The researcher has created a conceptual framework for ABC implementations in TSEs based on the findings of this study. The 10 steps of the framework are shown below and are to be implemented within a “top management support” context (see Figure 10.1, Chapter 10):

- **Step 1:** The project should be conducted by hiring an external consultant (see **A** in Figure 10.1)
- **Step 2:** The project should be implemented using a stand-alone system (see **C** in Figure 10.1)
- **Step 3:** The project should be implemented using commercial software (see **D** in Figure 10.1)
- **Step 4:** The project should provide employees with sufficient knowledge about the ABC system (see **E** in Figure 10.1)
- **Step 5:** The project should select a multidisciplinary implementation team (see **F** in Figure 10.1)
- **Step 6:** The project should verify the main objectives of the project appropriately (see **G** in Figure 10.1)
- **Step 7:** The project should be preceded by a pilot project (see **H** in Figure 10.1)
- **Step 8:** The project should identify tangible benefits (see **I** in Figure 10.1)
- **Step 9:** The project should identify the significant problems of its execution (see **J** in Figure 10.1)
- **Step 10:** The project should classify its progress using the Krumwiede (1997) Model (see **K** in Figure 10.1)

11.5 Further Research

This research has indicated a number of areas for further research as follows:

- Due to the small size of the overall sample and the industry groups, the results obtained from the present study are not necessarily generalisable to all Thai organisations. Therefore, this present study should be extended to include a large sample of Thai organisations within the public sector, particularly, other Thai State Enterprises (TSEs).
- The literature review has reported how ABC has been implemented and investigated in many countries across the world and that the ABC system of the USA has been adopted by organisations in Thailand and elsewhere. Therefore, this present study should be extended to include organisational cultures among western and eastern organisations, in terms of perceptions, attitudes, and behaviours, based on the cross-culture study carried out by Professor Geert Hofstede in 1985.

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APPENDIX

A: Research Instruments

B: Correspondence according to the problem on
NUD*IST programme (Version 4, 6) when using non-English version

Appendix A: Research Instruments

1 November 2001

Dear Director of Finance and Accounting:

I am a PhD student at Newcastle Business School, UNN and currently in the first stage of conducting primary research into Activity-Based Costing (ABC) in Thailand. I am conducting a survey to investigate the implementation of ABC in Thailand in both the public and private sectors. As a result of the Asian financial crisis in 1997, Thailand began to experience adverse financial and economic development. Since then the Government has taken a number of steps to address the adverse economic conditions and has commenced a series of economic and social reforms and begun to accelerate the process of privatisation of Thai State Enterprises (public sector). The implementation of Activity-Based Costing Systems (ABC) is one of the initiatives being introduced in Thai organisations.

The following questions relate to your organisation. I recognise that some of the information requested maybe sensitive; **your response will be kept confidential**. The information will only be used in summarised form. In order to ensure total confidentiality the list of names and addresses of all respondents will be destroyed when the research is completed. A summary of aggregate results from all respondents will be included in my thesis and related articles.

I would be extremely grateful if you could spare 15 minutes to answer all of the questions and to return the questionnaire to me by **15 December 2001**. If you have any questions or comments regarding this questionnaire, please do not hesitate to contact John J. Robinson (Principal Supervisor) or me at this above address.

I look forward to receiving your completed questionnaire soon.

Yours sincerely

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School of AFIS
E-mail: t.tupmongkol@unn.ac.uk

John J. Robinson
Principal Supervisor
Divisional Leader of Management Accounting
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Our reference: _____

Activity-Based Costing (ABC) Systems in Thailand
การบัญชีต้นทุนกิจกรรมในประเทศไทย

Questionnaire:
แบบสอบถาม

General Information	Official Use
ข้อมูลทั่วไป	
1) The characteristics of your organisation: ลักษณะขององค์กร	
Private Sector: ภาคเอกชน	
<input type="checkbox"/> International Company บริษัทข้ามชาติ	1.....
<input type="checkbox"/> Thai Company บริษัทไทย	2.....
<input type="checkbox"/> Parent Company บริษัทใหญ่	3.....
<input type="checkbox"/> Subsidiary Company บริษัทย่อย	4.....
Public Sector: ภาครัฐ	
<input type="checkbox"/> Ministry กระทรวง, ทบวง	5.....
<input type="checkbox"/> Department กรม	6.....
<input type="checkbox"/> Local Government Office สำนักงานราชการส่วนท้องถิ่น	7.....
<input type="checkbox"/> State Enterprises รัฐวิสาหกิจ	8.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	9.....
2) Please indicate your type of business: โปรดระบุชนิดของธุรกิจ	
<input type="checkbox"/> Manufacturing ผู้ผลิต	10.....
<input type="checkbox"/> Wholesale / Retail ธุรกิจค้าส่ง / ค้าปลีก	11.....
<input type="checkbox"/> Financial and Banking ธุรกิจการเงินและการธนาคาร	12.....
<input type="checkbox"/> Transportation การขนส่ง	13.....
<input type="checkbox"/> Telecommunication & IT การสื่อสารโทรคมนาคมและสารสนเทศ	14.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	15.....
3) Your organisation is primarily located: สถานที่ตั้งขององค์กร	
<input type="checkbox"/> North ภาคเหนือ	16.....
<input type="checkbox"/> South ภาคใต้	17.....
<input type="checkbox"/> Middle ภาคกลาง	18.....
<input type="checkbox"/> East ภาคตะวันออก	19.....
<input type="checkbox"/> West ภาคตะวันตก	20.....
4) Number of employees in your organisation: จำนวนพนักงานขององค์กร	
<input type="checkbox"/> Less than 500 น้อยกว่า 500 คน	21.....
<input type="checkbox"/> 501 - 1,000 501 - 1,000 คน	22.....
<input type="checkbox"/> 1,001 - 5,000 1,001 - 5,000 คน	23.....
<input type="checkbox"/> 5,001 - 10,000 5,001 - 10,000 คน	24.....
<input type="checkbox"/> 10,001 - 20,000 10,001 - 20,000 คน	25.....
<input type="checkbox"/> More than 20,000 มากกว่า 20,000 คน	26.....
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<p>5) Current annual turnover / annual budgetary of your organisation.</p> <p>รายได้ / งบประมาณ ขององค์กรในปีปัจจุบัน</p> <p>_____ Bath. บาท</p>	27.....
<p>6) Please statement briefly of main responsibilities:</p> <p>โปรดอธิบายความรับผิดชอบหลักของท่าน</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	28.....
<p>7) Your qualifications: ภูมิการศึกษาของท่าน</p> <p><input type="checkbox"/> College วิทยาลัย</p> <p><input type="checkbox"/> Bachelors (e.g. BA / BBA / BSc) ปริญญาตรี</p> <p><input type="checkbox"/> Masters (e.g. MA / MBA / MSc) ปริญญาโท</p> <p><input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____</p>	<p>29.....</p> <p>30.....</p> <p>31.....</p> <p>32.....</p>
<p>8) You have been working for this organisation: ท่านทำงานในองค์กรนี้มากี่ปีแล้ว</p> <p><input type="checkbox"/> 0 – 2 years 0 – 2 ปี</p> <p><input type="checkbox"/> 3 – 5 years 3 – 5 ปี</p> <p><input type="checkbox"/> 6 – 10 years 6 – 10 ปี</p> <p><input type="checkbox"/> More than 10 years มากกว่า 10 ปี</p>	<p>33.....</p> <p>34.....</p> <p>35.....</p> <p>36.....</p>
<p align="center">Cost Accounting System Information</p> <p align="center">ข้อมูลระบบการบัญชีต้นทุน</p>	
<p>9) Please describe the costing system, your organisation is using:</p> <p>ระบบการบัญชีต้นทุน, ชนิดใดที่องค์กรของท่านกำลังใช้อยู่</p> <p><input type="checkbox"/> Traditional System การบัญชีต้นทุนแบบดั้งเดิม</p> <p align="center">(Go to question 10 – 14) ถ้าเลือกข้อนี้ ให้ตอบคำถามข้อ 10 – 14</p> <p><input type="checkbox"/> Activity-Based Costing System การบัญชีต้นทุนกิจกรรม</p> <p align="center">(Go to question 15 - 30) ถ้าเลือกข้อนี้ ให้ตอบคำถามข้อ 15 – 30</p> <p><input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____ (Stop) หยุด</p>	<p>37.....</p> <p>38.....</p> <p>39.....</p>
<p>10) What kind of costing techniques is your organisation using?</p> <p>องค์กรของท่านกำลังใช้เทคนิคการคำนวณต้นทุนวิธีใด</p> <p><input type="checkbox"/> Standard Costing การบัญชีต้นทุนมาตรฐาน</p> <p><input type="checkbox"/> Absorption Costing (Full Costing) การบัญชีต้นทุนเต็ม</p> <p><input type="checkbox"/> Variable Costing (Direct Costing) การบัญชีต้นทุนผันแปร</p> <p><input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____</p>	<p>40.....</p> <p>41.....</p> <p>42.....</p> <p>43.....</p>

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11) How long has your present costing system been operating? ระบบการบัญชีต้นทุนที่ท่านใช้อยู่ในปัจจุบัน ท่านใช้มาแล้วกี่ปี	44.....
<input type="checkbox"/> Less than 2 years น้อยกว่า 2 ปี	45.....
<input type="checkbox"/> 3 – 5 years 3 – 5 ปี	46.....
<input type="checkbox"/> 6 – 10 years 6 – 10 ปี	47.....
<input type="checkbox"/> More than 10 years มากกว่า 10 ปี	
12) How would you rate the quality of your current costing system? ระบบการบัญชีต้นทุนที่ท่านใช้อยู่ในปัจจุบัน ท่านประเมินคุณภาพของต้นทุนอย่างไร	48.....
<input type="checkbox"/> Excellent ดีมาก	49.....
<input type="checkbox"/> Good ดี	50.....
<input type="checkbox"/> Adequate พอใช้	51.....
<input type="checkbox"/> Less than adequate ค่อนข้างแย่	52.....
<input type="checkbox"/> Poor แย่	
13) How is the traditional system related to financial accounting? ระบบการบัญชีต้นทุนแบบดั้งเดิมมีความเกี่ยวข้องกับระบบบัญชีการเงินอย่างไร	
<input type="checkbox"/> Stand-alone system not tied to general ledger. ระบบเดี่ยวไม่เกี่ยวข้องกับระบบบัญชีแยกประเภท	53.....
<input type="checkbox"/> Separate system but tied to general ledger. ระบบแยกต่างหากจากกันแต่เกี่ยวข้องกับระบบบัญชีแยกประเภท	54.....
<input type="checkbox"/> Fully integrate with financial accounting system. ระบบเดียวกันกับระบบบัญชีการเงิน	55.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	56.....
14) If you have not implemented ABC system, why? ในกรณีที่ท่านไม่ได้ใช้ระบบการบัญชีต้นทุนกิจกรรม, อยากทราบว่าทำไม	
<input type="checkbox"/> No knowledge of ABC. ไม่มีความรู้เกี่ยวกับการบัญชีต้นทุนกิจกรรม	57.....
<input type="checkbox"/> ABC system is not suitable for this organisation. ระบบการบัญชีต้นทุนกิจกรรมไม่เหมาะสมกับองค์กรนี้	58.....
<input type="checkbox"/> ABC system is too costly. ระบบการบัญชีต้นทุนกิจกรรมมีต้นทุนสูงเกินไป	59.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	60.....
15) For what purpose(s) is your organisation implementing ABC system? (Selected all appropriate) การนำระบบการบัญชีต้นทุนกิจกรรมมาใช้ในองค์กรของท่านมีวัตถุประสงค์อย่างไร (เลือกได้มากกว่าหนึ่งข้อ)	
<input type="checkbox"/> Product Costing ต้นทุนผลิตภัณฑ์	61.....
<input type="checkbox"/> Process Improvement การปรับปรุงกระบวนการผลิต	62.....
<input type="checkbox"/> Cost Reduction การลดต้นทุน	63.....

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<input type="checkbox"/> Re-engineering การปฏิรูประบบ	64.....
<input type="checkbox"/> Organization Policy นโยบายขององค์กร	65.....
<input type="checkbox"/> Benchmarking การเปรียบเทียบในเชิงการแข่งขันทางธุรกิจ	66.....
<input type="checkbox"/> Budgeting การงบประมาณ	67.....
<input type="checkbox"/> Performance Measurement การประเมินผล	68.....
<input type="checkbox"/> Pricing Decision การกำหนดราคา	69.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	70.....
16) Does your organisation hire external consultants to implement ABC system?	
องค์กรของท่านนำระบบการบัญชีต้นทุนกิจกรรมมาใช้โดยการจ้างบริษัทที่ปรึกษาใช่หรือไม่	
<input type="checkbox"/> Yes. ใช่ Name of consultant company: _____	71.....
ชื่อของบริษัทที่ปรึกษาคือ _____	72.....
<input type="checkbox"/> No. ไม่ใช่ (please answer the question 17) โปรดตอบคำถามข้อ 17	
17) If you utilize internal staff to implement the ABC system, which department are they come from?	
กรณีที่องค์กรของท่านนำระบบการบัญชีต้นทุนกิจกรรมมาใช้เองท่านใช้บุคลากรจากหน่วยงานใด	
<input type="checkbox"/> Manufacturing Department แผนกการผลิต	73.....
<input type="checkbox"/> Marketing Department แผนกการตลาด	74.....
<input type="checkbox"/> Administration Department แผนกธุรการ	75.....
<input type="checkbox"/> Accounting Department แผนกการบัญชี	76.....
<input type="checkbox"/> Financial Department แผนกการเงิน	77.....
<input type="checkbox"/> R & D Department แผนกรวิจัยและพัฒนา	78.....
<input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____	79.....
18) How long has your organisation been implementing the ABC system?	
องค์กรของท่านนำระบบการบัญชีต้นทุนกิจกรรมมาใช้นานเท่าไร	
<input type="checkbox"/> 0 - 6 months 0 - 6 เดือน	80.....
<input type="checkbox"/> 7 - 12 months 7 - 12 เดือน	81.....
<input type="checkbox"/> 13 - 18 months 13 - 18 เดือน	82.....
<input type="checkbox"/> 19 - 24 months 19 - 24 เดือน	83.....
<input type="checkbox"/> 25 - 30 months 25 - 30 เดือน	84.....
<input type="checkbox"/> 31 - 36 months 31 - 36 เดือน	85.....
<input type="checkbox"/> More than 36 months มากกว่า 36 เดือน	86.....
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<p>19) How is the ABC system related to financial accounting?</p> <p>ระบบการบัญชีต้นทุนกิจกรรมมีความเกี่ยวข้องกับระบบบัญชีการเงินอย่างไร</p> <p><input type="checkbox"/> Stand-alone system not tied to general ledger. ระบบเดี่ยวไม่เกี่ยวข้องกับระบบบัญชีแยกประเภท</p> <p><input type="checkbox"/> Separate system but tied to general ledger. ระบบแยกต่างหากจากกันแต่เกี่ยวข้องกับระบบบัญชีแยกประเภท</p> <p><input type="checkbox"/> Fully integrate with financial accounting system. ระบบเดียวกันกับระบบบัญชีการเงิน</p> <p><input type="checkbox"/> Other (please specify): อื่นๆ (โปรดระบุ) _____</p>	<p>Official Use</p> <p>87.....</p> <p>88.....</p> <p>89.....</p> <p>90.....</p>															
<p>20) How much money has already been invested in implementing ABC system?</p> <p>จำนวนเงินเท่าใดที่ท่านได้จ่ายไปในการลงทุนกับระบบการบัญชีต้นทุนกิจกรรม</p> <p><input type="checkbox"/> Under £17,000 ต่ำกว่า 1,000,000 บาท</p> <p><input type="checkbox"/> £17,001 – £34,000 1,000,001 – 2,000,000 บาท</p> <p><input type="checkbox"/> £34,001 – £51,000 2,000,001 – 3,000,000 บาท</p> <p><input type="checkbox"/> £51,001 – £68,000 3,000,001 – 4,000,000 บาท</p> <p><input type="checkbox"/> £68,001 – £85,000 4,000,001 – 5,000,000 บาท</p> <p><input type="checkbox"/> Over £85,000 มากกว่า 5,000,000 บาท</p>	<p>91.....</p> <p>92.....</p> <p>93.....</p> <p>94.....</p> <p>95.....</p> <p>96.....</p>															
<p>Please by using X the degree to which you agree with the following statements regarding ABC in your organisation. (questions 21-30)</p> <p>โปรดทำเครื่องหมาย X ลงในช่องแสดงความคิดเห็นของท่านว่าเห็นด้วยหรือไม่เห็นด้วยอย่างไร กับข้อความที่เกี่ยวข้องกับองค์กรของท่าน (คำถามที่ 21-30)</p>																
<p>21) ABC system receives strong active support from top management. ระบบการบัญชีต้นทุนกิจกรรมได้รับการสนับสนุนอย่างเต็มที่จากผู้บริหารสูงสุดขององค์กร</p> <table border="0"> <tr> <td>Strongly Disagree</td> <td>Disagree</td> <td>Neither agree or disagree</td> <td>Agree</td> <td>Strongly Agree</td> </tr> <tr> <td>ไม่เห็นด้วยอย่างมาก</td> <td>ไม่เห็นด้วย</td> <td>ยังไม่ได้ตัดสินใจ</td> <td>เห็นด้วย</td> <td>เห็นด้วยอย่างมาก</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>97.....</p>
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree												
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
<p>22) The ABC implementation team is truly cross-functional. ทีมงานระบบบัญชีต้นทุนกิจกรรมครอบคลุมทุกส่วนขององค์กรอย่างถูกต้อง</p> <table border="0"> <tr> <td>Strongly Disagree</td> <td>Disagree</td> <td>Neither agree or disagree</td> <td>Agree</td> <td>Strongly Agree</td> </tr> <tr> <td>ไม่เห็นด้วยอย่างมาก</td> <td>ไม่เห็นด้วย</td> <td>ยังไม่ได้ตัดสินใจ</td> <td>เห็นด้วย</td> <td>เห็นด้วยอย่างมาก</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>98.....</p>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
<p>23) When the ABC system initiative began, there was consensus about its specific objectives. เมื่อเริ่มต้นการใช้ระบบการบัญชีต้นทุนกิจกรรม, มีการกำหนดวัตถุประสงค์อย่างรัดกุม</p> <table border="0"> <tr> <td>Strongly Disagree</td> <td>Disagree</td> <td>Neither agree or disagree</td> <td>Agree</td> <td>Strongly Agree</td> </tr> <tr> <td>ไม่เห็นด้วยอย่างมาก</td> <td>ไม่เห็นด้วย</td> <td>ยังไม่ได้ตัดสินใจ</td> <td>เห็นด้วย</td> <td>เห็นด้วยอย่างมาก</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>99.....</p>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												

					Official Use
24) Adequate training was provided for designing ABC system. มีการกำหนดการฝึกอบรมอย่างเพียงพอสำหรับการออกแบบระบบการบัญชีต้นทุนกิจกรรม					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	100.....
25) Adequate training was provided for implementing ABC system. มีการกำหนดการฝึกอบรมอย่างเพียงพอสำหรับการส่งเสริมระบบการบัญชีต้นทุนกิจกรรม					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	101.....
26) Adequate training was provided for using ABC system. มีการกำหนดการฝึกอบรมอย่างเพียงพอสำหรับการใช้ระบบการบัญชีต้นทุนกิจกรรม					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	102.....
27) The ABC implementation has to be involved a great deal of work in the organisation. การนำระบบการบัญชีต้นทุนกิจกรรมจะเกี่ยวข้องกับปริมาณงานจำนวนมากภายในองค์กร					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	103.....
28) The initial pilot implementation of ABC is required, before the implementation becomes a full ABC system. ต้องมีการกำหนดโครงการนำร่อง ก่อนที่จะจัดทาระบบอย่างเต็มรูปแบบสำหรับ การใช้ระบบการบัญชีต้นทุนกิจกรรม					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	104.....
29) It is very difficult to determine the activities, when starts the ABC implementation. การกำหนดกิจกรรมเป็นเรื่องยากมากเมื่อเริ่มใช้ระบบการบัญชีต้นทุนกิจกรรม					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105.....
30) In my opinion, ABC has achieved its purpose. ในความคิดเห็นของฉัน, ระบบการบัญชีต้นทุนกิจกรรมสามารถบรรลุตามวัตถุประสงค์					
Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	
ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วย	ยังไม่ได้ตัดสินใจ	เห็นด้วย	เห็นด้วยอย่างมาก	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	106.....
P6/7					

<p>Would you be willing to help me further research by interview? ท่านยินดีที่จะช่วยเหลือข้าพเจ้าในการทำวิจัยต่อไปโดยการสัมภาษณ์หรือไม่</p> <p><input type="checkbox"/> Yes. ใช่ <input type="checkbox"/> No. ไม่ใช่</p>	<p><u>Official Use</u> 107.....</p>
<p>Would you be interested in the findings of this research? ท่านสนใจที่จะได้รับผลสรุปของงานวิจัยนี้หรือไม่</p> <p><input type="checkbox"/> Yes. ใช่ <input type="checkbox"/> No. ไม่ใช่</p>	<p>108.....</p>
<p>If you have any additional comments you wish to make about your answers or the contents of this questionnaire, please add them here:</p> <p>ถ้าท่านต้องการแสดงความคิดเห็นอื่นๆเพิ่มเติมท่านสามารถตอบคำถามหรือเสนอความคิดเห็นเกี่ยวกับแบบสอบถามนี้ได้โดยใช้ที่ว่างที่ให้ไว้</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	
<p>Thank you for completing this questionnaire. Anonymity is assured and your responses will be used purely for academic purposes.</p> <p>ขอบคุณสำหรับการตอบแบบสอบถามอย่างสมบูรณ์ ชื่อของท่านจะถูกปกปิดอย่างแน่นหนาและความคิดเห็นของท่าน จะถูกใช้เพื่อวัตถุประสงค์ทางการศึกษาเท่านั้น</p>	

Semi-structured Interview

Group A: Chief Executive

The researcher has to interview this person because they have the responsibility for decision-making in relation to the organisation's policies, including whether or not to implement an ABC system, which offers executives a dramatic improvement in the management of activities and, as a result, increases an organisation's competitiveness. Moreover, it is important to note that a chief executive has to demonstrate strong support to this system in all ways to ensure success.

Questions for Chief Executive: The rationale of these questions is that the researcher expects to get the information from each organisation in terms of the objectives, problems or motivation, the expected benefits from ABC implementation and any improvement after implementing this system within the organisation. The questions that will be asked are:

- Q 1: What were the objectives of the ABC implementation?
- Q 2: What were the problems or motivation, which lead to the implementation of ABC?
- Q 3: What were the expected benefits from ABC implementation?
- Q 4: Have you seen any improvement after implementing ABC?

Group B: Director of Accounting

The researcher has to interview this person since they have the responsibility for planning and implementation of the ABC system in the organisation, from the strategic plans to the action plans.

Questions for Director of Accounting: The rationale of these questions is that the researcher expects to get information in each organisation in terms of the objectives, problems or motivation, any support required, expected benefits from implementation of ABC and any improvement after implementing this system in the organisation, and the lessons learnt as a result. The questions that will be asked are:

- Q 1: What were the objectives of the ABC implementation?
- Q 2: What were the problems or motivation, which lead to the implementation of ABC?
- Q 3: Do you get the strong support from the top management?
- Q 4: Have you employed outside/ inside implementers/ facilitators?
- Q 5: What were the expected benefits of ABC implementation?
- Q 6: Have you seen any improvement after implementing ABC?
- Q 7: What were the lessons learnt from the implementation of ABC?

Group C: Project Coordinator and Team Members

The researcher has to interview these persons because they are directly involved in the implementation process of an ABC system from the beginning until the end of the action plans.

Questions for Project Manager and Team Members: The rationale of these questions is that the researcher expects to get the information in each organisation in terms of how they implement an ABC system in their organisations. The questions that will be asked are:

Q 1: Please describe your role in the implementation of ABC.

Q 2: Please describe the ABC implementation process.

Q 3: How did you implement an ABC system in your organisation?

Initial Stage

Q 1: How did you select the team members?

Q 2: How did you organise an ABC seminar?

Q 3: How did you design an ABC system?

Q 4: How did you train an ABC system?

Implementation Stage

Q 1: How did you formalise project scope?

Q 2: How did you gather the data (create the cot database)?

Q 3: How did you identify activities and cost driver?

Q 4: How did you build the model (Software)?

Q 5: How did you do reporting and recommendations?

Q 6: How did you integrate with management processes?

Q 7: What problems were encountered during implementation?

Q 8: What were the lessons learned from the implementation of ABC?

Group D: Users

The researcher believes users should gain benefits from an ABC system, which also gives them a clearer picture of the economics of their operations. Therefore, the researcher would like to get feedback from the users.

Questions for Users: The rationale of these questions is that the researcher expects to get the information in each organisation in terms of the feedback on implementation of an ABC system in the organisation. The questions that will be asked are:

- Q 1:** What were the expected benefits of ABC implementation?
- Q 2:** Have you got the benefits you expected?
- Q 3:** Have you seen any improvement after implementing ABC?
- Q 4:** Can you identify any deviation from the original objectives during the actual implementation of ABC system?
- Q 5:** How have you used ABC information for planning, decision making and performance measurement in your job?

**Appendix B: Correspondence according to the problem on
NUD*IST programme (Version 4, 6) when using non-English version**

Correspondence according to the problem on NUD*IST programme when using non-English version

Message Sent from Sue Bullen

Dear Thana

Language other than English are not a problem in N4 per se. Rather it is the font that will restrict what you can do. Depending on your version of Windows you will find that as N4 uses the system font, this is what all text will display in - usually this is simple plain text.

For language that use a modified English font, the accents and special characters may have to be displayed without or as standard characters which can make the text less easy to read about usable.

Characters such as those used in Chinese, Japanese, Korean, Thai, Hindi, Arabic, Cyrillic etc. are more restrictive but a non-English version of Windows may allow you to see a sensible approximation of this text in N4.

We have not performed extensive testing for different fonts across different systems because of the sheer number of combinations involved, however, if you do not yet have a software, importing a few files (saved as .text) into the free demo download from our website (www.qsrinternational.com) should allow you to ascertain what works and what doesn't. The demo is fully functional but non-save version.

The above advice is based on reports from other users regarding their experiences - of course, any feedback you can give us will add to this and would be greatly appreciated.

Regards

Sue

Sue Bullen

Support and Systems Officer

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